

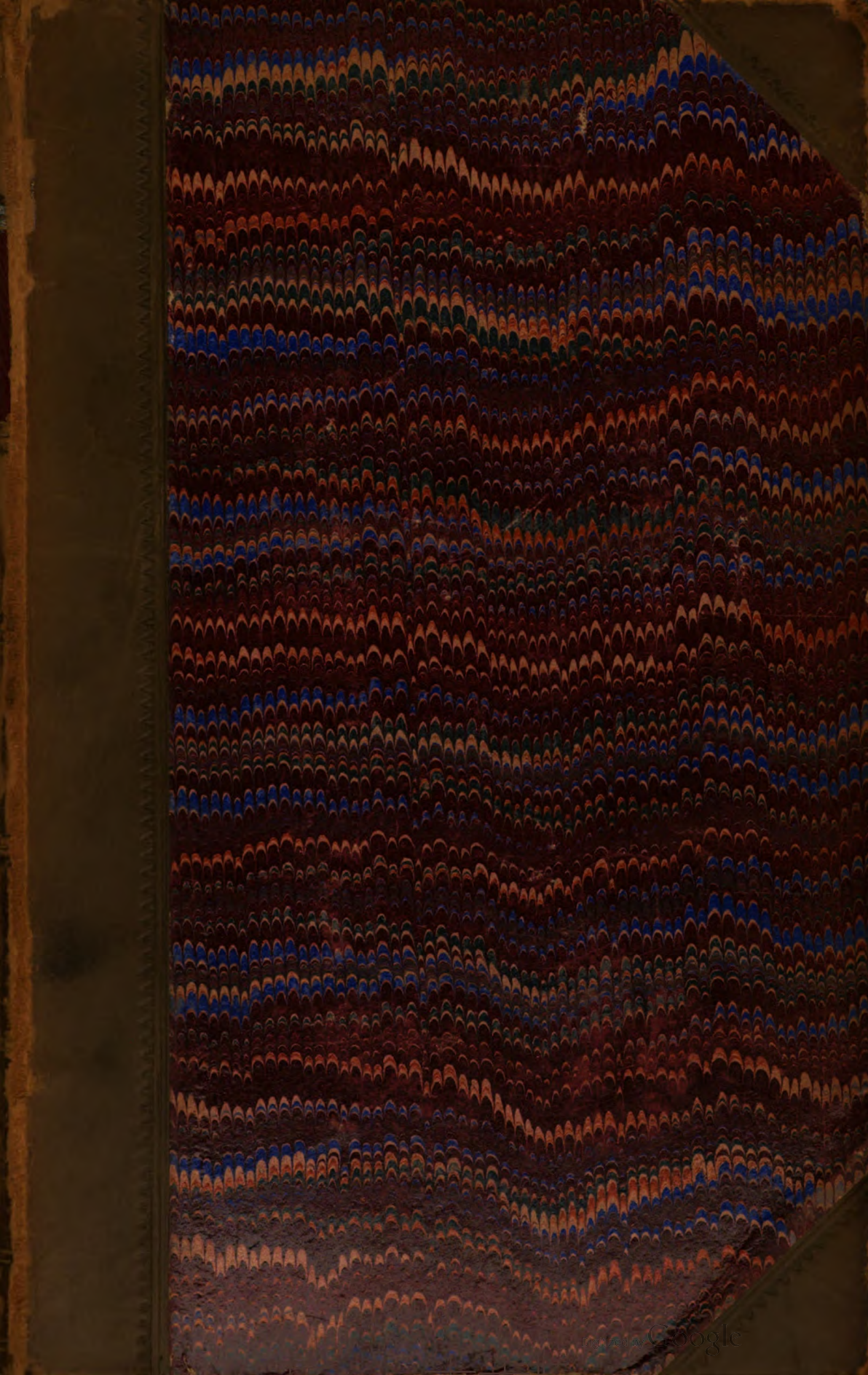
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# ARMY MEDICAL DEPARTMENT

# REPORT

FOR THE YEAR 1888;

WITH APPENDIX.

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VOLUME XXX.

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1890.

*Price One Shilling and Eightpence.*





TO THE RIGHT HONOURABLE  
THE SECRETARY OF STATE FOR WAR.

---

SIR,

I HAVE the honour to submit the accompanying  
Report on the Health and Sanitary Condition of the  
Army for 1888.

I have the honour to be,

SIR,

Your most obedient

Humble Servant,

W. A. MACKINNON,

*Director-General.*

MEDICAL DIVISION, WAR OFFICE,  
MAY 1890.



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# ARMY MEDICAL DEPARTMENT REPORT FOR 1888.

## STATISTICAL REPORT.

THE average annual strength of the troops serving at home and abroad in 1888, as computed from the returns received by the Army Medical Department, was 198,851 warrant officers, non-commissioned officers and men (exclusive of the Royal Malta Fencible Artillery, the 1st and 2nd West India Regiments, and the Gun Lascars at Ceylon, and at Hong Kong, Corps which are recruited locally); the admissions into hospital in this force were 193,233 and the deaths 1,845. The rates represented by these numbers are for admissions into hospital 971·7 and for deaths 9·21 per 1,000 of the average annual strength, the latter being calculated on a strength of 200,296, which includes detached men.

*Troops at  
Home and  
Abroad.*

The statistics of some of the most important of the results of sickness, in every Command in which the troops were stationed, are exhibited in the following Table :—

1888.

| White Troops.                    | Average Strength. | Admitted into Hospital. | Died.        | Sent Home as Invalids. | Discharged as Invalids. | Constantly non-effective from Sickness. |
|----------------------------------|-------------------|-------------------------|--------------|------------------------|-------------------------|-----------------------------------------|
| <b>Troops at Home and Abroad</b> | <b>198,851</b>    | <b>193,233</b>          | <b>1,845</b> | <b>2,078</b>           | <b>2,776</b>            | <b>10,715·97</b>                        |
| United Kingdom                   | 101,695           | 75,845                  | 570          | —                      | 1,641                   | 4520·11                                 |
| Gibraltar                        | 4,736             | 2,777                   | 16           | 90                     | 32                      | 172·75                                  |
| Malta                            | 6,353             | 3,477                   | 40           | 77                     | 56                      | 211·18                                  |
| Cyprus                           | 855               | 826                     | 3            | 4                      | 4                       | 46·79                                   |
| Egypt                            | 3,346             | 3,428                   | 49           | 75                     | 53                      | 216·09                                  |
| Canada                           | 1,829             | 690                     | 11           | 36                     | 27                      | 46·15                                   |
| Bermuda                          | 1,346             | 928                     | 24           | 12                     | 10                      | 46·57                                   |
| West Indies                      | 1,164             | 1,279                   | 4            | 14                     | 9                       | 64·67                                   |
| Cape of Good Hope and St. Helena | 3,717             | 3,277                   | 29           | 131                    | 60                      | 217·58                                  |
| Mauritius                        | 405               | 400                     | 5            | 23                     | 8                       | 21·38                                   |
| Ceylon                           | 1,133             | 1,265                   | 18           | 19                     | 10                      | 72·72                                   |
| China and Straits Settlements    | 2,329             | 2,640                   | 27           | 40                     | 19                      | 150·42                                  |
| India                            | 68,139            | 94,489                  | 1,036        | 1,557                  | 847                     | 4929·61                                 |
| On board Ship                    | 2,304             | 2,412                   | 13           | —                      | —                       | —                                       |

1888.

*Troops at  
Home and  
Abroad.*

| White Troops.                      | Ratio per 1,000 of Strength. |        |                        |                      |                                         | Average sick-time to each Soldier. | Average duration of each case of Sickness. |
|------------------------------------|------------------------------|--------|------------------------|----------------------|-----------------------------------------|------------------------------------|--------------------------------------------|
|                                    | Admitted.                    | Died.  | Sent Home as Invalids. | Discharged Invalids. | Constantly non-effective from Sickness. |                                    |                                            |
| Troops at Home and Abroad          | * 971·7                      | † 9·21 | ‡ 21·91                | § 14·02              | 54·52                                   | Days.    19·90                     | Days.    20·50                             |
| United Kingdom -                   | 740·9                        | 5·52   | —                      | 15·91                | 44·45                                   | 16·27                              | 21·96                                      |
| Gibraltar -                        | 586·3                        | 3·37   | 19·00                  | 6·75                 | 36·47                                   | 13·35                              | 22·77                                      |
| Malta -                            | 547·3                        | 6·29   | 12·12                  | 8·81                 | 33·24                                   | 12·16                              | 22·23                                      |
| Cyprus -                           | 966·1                        | 3·51   | 4·68                   | 4·68                 | 54·72                                   | 20·02                              | 20·73                                      |
| Egypt -                            | 1024·5                       | 14·64  | 22·41                  | 15·84                | 64·58                                   | 23·63                              | 23·07                                      |
| Canada -                           | 519·2                        | 8·27   | 27·08                  | 20·30                | 34·72                                   | 12·71                              | 24·48                                      |
| Bermuda -                          | 689·4                        | 17·83  | 8·91                   | 7·43                 | 34·60                                   | 12·66                              | 18·36                                      |
| West Indies -                      | 1098·8                       | 3·44   | 12·03                  | 7·73                 | 55·55                                   | 20·33                              | 18·50                                      |
| Cape of Good Hope and St. Helena - | 881·6                        | 7·80   | 35·24                  | 16·14                | 58·53                                   | 21·42                              | 24·30                                      |
| Mauritius -                        | 987·7                        | 12·35  | 56·79                  | 19·75                | 52·67                                   | 19·27                              | 19·52                                      |
| Ceylon -                           | 1116·5                       | 15·88  | 16·76                  | 8·82                 | 64·18                                   | 23·49                              | 21·04                                      |
| China and Straits Settlements -    | 1133·5                       | 11·59  | 17·18                  | 8·16                 | 64·59                                   | 23·64                              | 20·85                                      |
| India -                            | 1386·7                       | 15·20  | 22·85                  | 12·43                | 72·34                                   | 26·40                              | 19·04                                      |
| On board Ship -                    | 1046·9                       | 5·64   | —                      | —                    | —                                       | —                                  | —                                          |

\* Calculated on strength, excluding men detached (1,445).

† Calculated on strength, including men detached.

‡ Calculated on strength, excluding United Kingdom and troops on board ship.

§ Calculated on strength, including men detached, and excluding troops on board ship.

|| Calculations exclude men detached and troops on board ship.

1878 to 1887.

| White Troops.                      | Aggregate strength for 10 years. | Admitted into Hospital. | Deaths. | Sent Home as Invalids. | Discharged Invalids. | Constantly non-effective from Sickness. |
|------------------------------------|----------------------------------|-------------------------|---------|------------------------|----------------------|-----------------------------------------|
| Troops at Home and Abroad          | 1,748,374                        | 1,897,424               | 20,713  | 30,289                 | 34,258               | 93,962                                  |
| United Kingdom -                   | 883,586                          | 748,638                 | 5,954   | —                      | 20,630               | 40,512                                  |
| Gibraltar -                        | 45,426                           | 37,942                  | 313     | 1,519                  | 596                  | 2,257                                   |
| Malta -                            | 49,011                           | 39,748                  | 478     | 1,347                  | 705                  | 2,451                                   |
| Cyprus -                           | 5,959                            | 8,777                   | 98      | 235                    | 82                   | 413                                     |
| *Egypt -                           | 40,292                           | 51,677                  | 1,117   | 3,520                  | 1,175                | 3,053                                   |
| Canada -                           | 15,572                           | 11,486                  | 83      | 382                    | 296                  | 607                                     |
| Bermuda -                          | 15,760                           | 10,165                  | 136     | 263                    | 170                  | 547                                     |
| West Indies -                      | 9,457                            | 9,033                   | 153     | 237                    | 135                  | 439                                     |
| Cape of Good Hope and St. Helena - | 55,732                           | 46,479                  | 2,125   | 3,286                  | 1,237                | 2,899                                   |
| Mauritius -                        | 3,782                            | 8,889                   | 71      | 190                    | 70                   | 335                                     |
| Ceylon -                           | 9,640                            | 11,444                  | 138     | 346                    | 141                  | 597                                     |
| China and Straits Settlements -    | 19,882                           | 20,703                  | 169     | 732                    | 323                  | 981                                     |
| India -                            | 566,020                          | 867,252                 | 9,672   | 18,232                 | 8,698                | 38,871                                  |
| On board Ship -                    | 28,755                           | 25,691                  | 206     | —                      | —                    | —                                       |

\* For five years only.



1878 to 1887.

*Troops at  
Home and  
Abroad.*

| White Troops.                      | Ratio per 1,000 of Strength. |              |                        |                         |                                         | Average sick-time to each Soldier. | Average duration of each case of Sickness. |
|------------------------------------|------------------------------|--------------|------------------------|-------------------------|-----------------------------------------|------------------------------------|--------------------------------------------|
|                                    | Admitted.                    | Died.        | Sent Home as Invalids. | Discharged as Invalids. | Constantly non-effective from Sickness. |                                    |                                            |
| <b>Troops at Home and Abroad</b>   | <b>1085·2</b>                | <b>11·65</b> | <b>36·23</b>           | <b>19·58</b>            | <b>54·64</b>                            | <b>Days. 19·94</b>                 | <b>Days. 18·32</b>                         |
| United Kingdom -                   | 847·2                        | 6·52         | —                      | 22·59                   | 45·84                                   | 16·73                              | 19·75                                      |
| Gibraltar -                        | 835·2                        | 6·89         | 33·44                  | 13·12                   | 49·68                                   | 18·13                              | 21·71                                      |
| Malta -                            | 811·0                        | 9·75         | 27·48                  | 14·38                   | 50·01                                   | 18·25                              | 22·50                                      |
| Cyprus -                           | 1472·9                       | 16·44        | 39·43                  | 13·76                   | 69·80                                   | 25·29                              | 17·17                                      |
| *Egypt -                           | 1282·6                       | 27·72        | 87·36                  | 29·16                   | 75·78                                   | 27·66                              | 21·56                                      |
| Canada -                           | 737·6                        | 5·33         | 24·53                  | 19·01                   | 38·98                                   | 14·23                              | 19·29                                      |
| Bermuda -                          | 645·0                        | 8·63         | 16·69                  | 10·78                   | 34·71                                   | 12·67                              | 19·64                                      |
| West Indies -                      | 952·9                        | 16·18        | 25·06                  | 14·27                   | 46·42                                   | 16·94                              | 17·74                                      |
| Cape of Good Hope and St. Helena - | 833·8                        | 38·12        | 58·96                  | 22·19                   | 52·01                                   | 18·98                              | 22·77                                      |
| Mauritius -                        | 2218·1                       | 18·77        | 50·24                  | 18·51                   | 88·58                                   | 32·33                              | 14·58                                      |
| Ceylon -                           | 1187·1                       | 14·31        | 35·89                  | 14·62                   | 61·93                                   | 22·60                              | 19·04                                      |
| China and Straits Settlements -    | 1068·2                       | 8·72         | 37·77                  | 16·66                   | 50·61                                   | 18·47                              | 17·29                                      |
| India -                            | 1532·2                       | 17·09        | 32·21                  | 15·36                   | 68·67                                   | 25·06                              | 16·36                                      |
| On board Ship -                    | 893·4                        | 7·16         | —                      | —                       | —                                       | —                                  | —                                          |

\* For five years only.

## II.—ON THE HEALTH OF THE TROOPS SERVING IN THE UNITED KINGDOM.

### *Sickness and Mortality.*

#### *United Kingdom.*

The average strength of warrant officers, non-commissioned officers and men serving in the United Kingdom during the year, as shown in the returns furnished by medical officers, was 101,695. In addition to this there were a certain number of men detached from their corps, the average number of whom is computed to have been 1,445. The principal statistics of sickness and mortality among these troops as a whole, and also among those quartered in the three divisions of the kingdom during the year, are shown in the following table :—

| —                       | Average Strength. | Admissions. | Deaths. | Invalids. | Constantly Sick. |
|-------------------------|-------------------|-------------|---------|-----------|------------------|
| England and Wales . . . | 71,874            | 55,518      | 414     | 1,223     | 3415·70          |
| Scotland . . . . .      | 3,572             | 2,371       | 25      | 80        | 114·03           |
| Ireland . . . . .       | 26,249            | 17,456      | 131     | 338       | 990·38           |
| Total . . . . .         | 101,695           | 75,345      | 570     | 1,641     | 4520·11          |

(continued.)

| —                       | Ratios per 1,000. |         |              |                  | Average Sick Time to each Soldier. | Average Duration of each case of Sickness. |
|-------------------------|-------------------|---------|--------------|------------------|------------------------------------|--------------------------------------------|
|                         | Admissions.       | Deaths. | In-validing. | Constantly Sick. |                                    |                                            |
| England and Wales . . . | 772·4             | 5·76    | 17·01        | 47·52            | Days. 17·39                        | Days. 22·52                                |
| Scotland . . . . .      | 663·7             | 7·00    | 22·40        | 31·92            | 11·68                              | 17·60                                      |
| Ireland . . . . .       | 665·0             | 4·99    | 12·87        | 37·73            | 13·81                              | 20·76                                      |
| Total . . . . .         | 740·9             | *5·52   | *15·91       | 44·45            | 16·27                              | 21·96                                      |

\* Calculated on strength, including men detached (1,445).

Comparing the above results with corresponding ratios in the preceding year it will be observed as regards England and Wales that a decrease has occurred in the ratio of admission, equal to 41·8 per 1,000, but there is an increase of ·56 in the rate of mortality and one of ·35 in that of constantly sick. The average sick time to each soldier was longer by a fraction of a day, and the average duration of each case of sickness by 1·37 days than the corresponding period in the previous year. Compared with the average ratios

for the preceding two years there is a decline of 65·5 in admission rate, one of ·34 in the death rate, and one of 5·2 in the constantly sick rate. The average sick time was shorter by ·15 of a day, and the average duration of each case of sickness longer by 1·59 days. *United Kingdom.*

In Scotland the admission ratio was almost identical with that of the preceding year, but the ratio of constantly sick shows a decline of 1·09, while the mortality rate is increased by ·13 per 1,000. The average sick time to each soldier was shorter by ·37, and the average duration of each case of sickness longer by ·53 of a day. In comparison with average ratios for the previous two years a decline of 21·9 per 1,000 is observed in the ratio of admission, and one of 1·45 in that of constantly sick, but the death rate is increased by 1·23. The average sick time to each soldier was shorter by ·50, and the average duration of each case of sickness by ·17 of a day.

In Ireland, as compared with similar ratios in the preceding year, the admission ratio is lower by 60·7, and the constantly sick rate by 3·23 per 1,000, but the death rate shows scarcely any change. The average sick time to each soldier was shorter by 1·14 days, and the average duration of each case of sickness longer by ·16 of a day. Compared with average ratios for the previous two years a decrease of 99·5 per 1,000 is observed in admission rate, one of ·71 in death rate, and one of 4·58 in constantly sick rate. The average sick time to each man was shorter by 1·63 days, and the average duration of each case of sickness longer by ·56 of a day.

Taking the three great divisions of the kingdom together, the ratio of admission shows a decline of 45·9 per 1,000, but the ratio of constant inefficiency through sickness differs only fractionally from the corresponding ratio in the preceding year; the death rate, however, is increased by ·39. The average sick time to each soldier was shorter by ·20, and the average duration of each case of sickness longer by 1·03 days than the similar period in the previous year. Compared with the average of the results for the previous 10 years the decrease of admission rate is equal to 106·4 per 1,000, that of the mortality rate to 1·00, and that of constant efficiency to 1·39. The average sick time to each soldier was shorter by ·46 of a day, but the average duration of each case of sickness longer by 2·21 days than the corresponding decennial average period.

The total loss by death and final discharge from the service by invaliding was 2,211 men, being in the ratio of 21·43 per 1,000 of strength, which is higher than the corresponding ratio in the preceding year by 1·50.

The principal statistics of sickness, mortality, and invaliding in the United Kingdom during the year are given in Abstract I., and those for each of the three divisions of the kingdom in Abstracts A, B, and C.

**GENERAL DISEASES.—Diseases dependent on morbid Poisons.—Eruptive fevers** caused 734 admissions and 5 deaths, being in the ratios of 7·2 and ·05 1,000 respectively. Compared with the corresponding ratio in the previous year scarcely any difference is observed, there being only a decline of ·2 in the admission rate, but the death rate is lower by half; and in comparison with the average ratios of the preceding five years there is an increase of 1·3 in admission rate, but the death rate remains unchanged.

There were 14 admissions for *small-pox* during the year, one case of which proved fatal. In the preceding year there were only 7 admissions, but also one death, and taking the previous five years the average number of admissions in each year was 10·6 and of deaths ·8. Ten of the cases, one of which was fatal, occurred at Sheffield, where the disease was very prevalent among the civil population in the early part of the year. Two cases occurred in Dublin, but in one case the disease was contracted elsewhere, and the other was that of an orderly who had been in attendance on the first case. There was one case at Shrewsbury in a recruit of a few days' service, the disease having been contracted before enlistment, and there was one mild case at Aldershot which was contracted by the man while on furlough.

Scarlet fever caused 237 admissions and 3 deaths; in the preceding year there were 185 admissions and 8 deaths. The admission ratio was equal to 2·3 per 1,000, which is above the corresponding rate in the previous year by ·5, and above the average rate for the preceding five years by 1·0. In England 188 cases occurred, equal to 2·6 per 1,000; in Scotland 3 cases, or ·8 per

*Troops on  
Board Ship.*

1,000, and in Ireland 46 cases, or 1·7 per 1,000. Nearly all the districts were effected to some extent, two only, the western district, and the Channel Islands, escaping. The greatest number of cases in any one station was 76 at Aldershot, while in the preceding year only 18 occurred. All parts of the camp were affected, and one case proved fatal. The disease was also somewhat prevalent among the civil population. In Dublin there were 37 cases, one fatal, as compared with 9 in the previous year. It is stated that scarlet fever was very prevalent in the city. At Woolwich 30 cases occurred, which, however, is less by 4 than in the previous year; the cases were generally of a mild type. In London 16 cases were reported, one of which was fatal. It is said that the disease was prevalent in the neighbourhood of the barracks. At Canterbury there were 10 cases; the disease also prevailed among the civil population. The same is said with regard to Manchester, where 8 cases occurred among the troops. There were 6 cases at Shorncliffe, 5 each at Burnley, Chatham, and Portsmouth, 4 at Colchester, and 4 at Dover, 3 at Dundalk, 2 at Fleetwood, Lancaster, Weedon, York, Great Yarmouth, Tilbury, Leith, and Belfast respectively, and the remaining 12 cases occurred at as many separate stations.

The admissions for measles were 176 in number, equal to a ratio of 1·7 per 1,000, as compared with 2·5 in the previous year, and with a quinquennial average rate of 2·2 per 1,000. In England 108 cases occurred, being in the ratio of 1·5 per 1,000, in Scotland 17 cases, or 4·8 per 1,000, and in Ireland 51 cases, or 1·9 per 1,000. All the different districts were more or less affected except the Chatham district and the Channel Islands, which also had immunity in the previous year. The cases were scattered over 44 different stations, Aldershot showing the greatest number, 39, which, however, is a good deal below that in the previous year. At Canterbury there were 19 cases, and the disease was prevalent among the civil population. In London 15 cases occurred and in Edinburgh 13. In Armagh and in Woolwich there were 9 cases each, at the Curragh 8, with one death, at Portsmouth 7, at Dublin and Omagh 6 each, at Buttevant 4, at Limerick 4, at Horfield, Dorchester, Gosport, Shorncliffe, and Kilkenny 2 cases respectively, and single cases at 27 different stations.

Epidemic rose rash was the cause of 37 admissions as compared with 33 in the previous year. As many as 29 of the attacks occurred at Colchester; it is stated that they were mild in character and scattered all over the camp; 3 cases occurred at Preston and one case in Lancaster, London, Glasgow, Jersey, and Cork respectively.

The remaining admissions for eruptive fevers were 262 for cow-pox and 8 for chicken-pox, there having been the same number of admissions for the former disease in the preceding year, but the number of the latter is increased by 2.

*Enteric fever* caused 126 admissions and 34 deaths as compared with 137 admissions and 28 deaths in the previous year. The admission ratio was 1·2 per 1,000 which is lower by ·2 than the rate in the preceding year and by ·1 than the decennial average rate. The mortality rate, ·33 per 1,000, is higher than the last year's rate by ·06, and than the average rate by ·03. The percentage of mortality to attack was 27·0 as compared with 20·4 in the previous year and with 22·5 the average ratio for the preceding 10 years. The cases in England numbered 49 and the deaths 14, being in the ratios of ·7 and ·20 per 1,000 respectively as compared with ·8 and ·22 in the previous year. In Scotland there were 2 cases and 1 death, equal to ratios of ·6 and ·28 per 1,000, and in Ireland there were 75 cases, or 2·8 per 1,000, and 19 deaths, or ·72 per 1,000; in this instance the admission ratio is almost the same as in the previous year, but the death rate is nearly double. The mortality to attack in England was 28 per cent., the same as in the previous year, and that in Ireland was 25 as compared with 12. All the districts in England were attacked except the Channel Islands and the Chatham district; it is noted that the latter has been free from this disease for five years. In Ireland cases occurred in all the districts. As in recent years by far the greatest number of cases of enteric fever occurred in Dublin, 55 attacks and 9 deaths; 31, or more than half of the cases, came from the Royal barracks, though the recommendations made by a committee in the previous year were being steadily carried out, such as the demolition of buildings to improve ventilation, improvements in drainage, &c.

A further special investigation as to the cause of this disease in these barracks, to be elsewhere alluded to, was made during the year. 11 cases were admitted from Ship Street barracks, but of these 6 were men who had been recently stationed in Pigeon House Fort within three weeks of admission, and may have contracted the disease while there; one man also was admitted directly from Pigeon House Fort. From Richmond barracks 7 cases were admitted; from the Royal Infirmary there were two cases, both of them orderlies; and there were single cases from Linen Hall barracks, Beggar's Bush barracks and Arbor Hill. The cases were treated in the following hospitals: 30 in that at Arbor Hill, of these three proved fatal; 17 with two deaths at the Royal Infirmary; 5, two of which died, at Richmond barracks; 2, with one death at the hospital at Beggar's Bush, and one fatal case at Portobello. The actual cause of any particular case was very rarely discovered, and though insanitary conditions have been discovered in barracks it must be remembered that the city itself has been in a very insanitary condition, and enteric fever has been very prevalent also among the civil population. At Aldershot 12 cases occurred during the year and four deaths; it is stated that it was not possible to trace the origin of these cases to any insanitary condition, though it is added that the defective sub-ventilation of some of the huts, mentioned in the previous year, was not entirely remedied. Nine cases and four deaths occurred at the Curragh, and four cases and one death at Newbridge. It is thought that some of these cases may have been contracted in Dublin, but for those that appear to have originated at these stations no insanitary condition was discovered as a cause; the drainage, however, was undergoing careful investigation. At Devonport five cases occurred, two of which proved fatal; of these it is believed that four were contracted outside the garrison, but the other one may have been due to local causes. Five cases occurred at Shoeburyness, two of which were contracted elsewhere; in two cases the cause could not be discovered, but the fifth was that of an orderly who had been in attendance on cases of the disease. At Portsmouth four cases occurred, two in Anglesea barracks, one in the station hospital, and one in lodgings in the town; two of the cases proved fatal. At Belfast there were three cases of enteric fever, two of them fatal; they occurred in men who had recently arrived from Dublin. At Woolwich three cases occurred, two of which died; they were not traced to defective sanitation and probably were contracted outside barracks. At Caterham three cases were reported, all of which recovered; it is said that no cause was discovered, and that two of the men attacked were recruits. Since that time, however, certain defects were found in drainage, which have been remedied. At Newcastle-on-Tyne also three cases occurred and recovered; no insanitary condition was discovered to cause them, and they came from different parts of the barracks. At Exeter two cases occurred, one of which died. The cause of these cases was not known; one man was a recruit just joined. In London also two cases occurred, which recovered; the cause of them is not given. There were single fatal cases at Shorncliffe and Hythe, which were contracted away from the station; also at Preston, Glencorse, and Castlebar, the cause of which was not known. There were single cases, which recovered, at the following stations: at Weedon, owing to defective condition of drainage; at Portland, owing to the unsatisfactory condition of a drain in the village; at Manchester, in a man on furlough from Ireland; at Edinburgh, Cork, and Duncannon Fort, the disease in each instance being believed to have been contracted outside barracks; and at Ashton-under-Lyne, Gosport, Chester, Reading, and Newtownards respectively, in these the cause of the disease was not known, and no insanitary condition discovered from which it would originate. There were also two deaths reported in men detached from their corps.

*Other Continued Fevers* were the cause of 450 admissions, being in the ratio of 4·4 per 1,000, which is below the corresponding rate in the preceding year by 2·4 per 1,000, and is a good deal below the average ratio for the previous five years. With the exception of a case of cerebro-spinal fever, which occurred at Newry, all the admissions were for simple continued fever or its variety, febricula. There was one death from cerebro-spinal fever; it occurred at Hilsea, in a case admitted in the preceding year. The admission ratio for those fevers in England was 3·1 per 1,000 as compared with 5·2 in the preceding year; in Scotland the ratio was 6·7 as compared with 5·8; and in

*United Kingdom.*



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Ireland the ratio was 7·8 as compared with 11·7 per 1,000 in the previous year. The greatest prevalence of these fevers was in the Belfast district, where the ratio reached 11·8; the next was in the Cork district, 9·9, and then the Dublin district with 6·1, the Home district having the same rate; the lowest ratio was 1·2 in the Woolwich district, the next above being 2·2 in the Aldershot district, and then 2·3 in the Southern district, and also in the Channel Islands. In the previous year also the greatest prevalence of simple continued fevers was in the Irish districts, and the least was in Woolwich and Aldershot. Compared with the results for the preceding year a decrease of admission rate has occurred in all the districts except Woolwich and North Britain, in each of which there was a fractional increase. The greatest decrease was equal to 8·0 per 1,000 in the Dublin district, and the next, 4·6, in the Western district. In the South-eastern and Belfast districts the decrease was only fractional.

*Dysentery.*—72 admissions and 4 deaths are returned, being in the ratios of ·7 and ·04 per 1,000 respectively, as compared with ·9 and ·03 in the preceding year. Sixty of the cases occurred in England, 10 in Ireland, and 2 in Scotland. In the Southern district 23 cases occurred, 15 being at Gosport, 6 at Portsmouth, 1 at Hilsa, and 1 at Christchurch; most of these were in men who had lately returned from India or Burma, where they had already suffered from the disease. Two deaths occurred at Portsmouth. At Chatham there were 7 admissions and at Sheerness 1, making 8 for the Chatham district; of these cases also it is stated that most of them were relapses in men recently returned from foreign service. In the Dublin district there were 7 cases, 6 occurring in the city itself; in the Northern district also there were 7 cases, including one fatal at Manchester. There were 6 cases in the South-eastern district, 3 being at Canterbury, and 3 at Shorncliffe. At Aldershot 5 cases occurred, and at Woolwich 4. In the Eastern district there were 3 admissions, 2 being at Colchester, of which one proved fatal; the man had recently returned from service in Burma. In the Home, North British, Channel Islands, and Cork districts there were 2 admissions respectively; at the Curragh there was one case, but in the Belfast and Western districts no admission occurred.

*Other diseases* of the 1st sub-group caused 168 admissions and 6 deaths, being in the ratios of 1·7 and ·05 per 1,000 respectively. In the previous year the corresponding ratios were 1·3 and ·01. Among the admissions were 12 for diphtheria, 6 of which terminated fatally. Four of the cases occurred at Canterbury, and three died. For three cases no definite cause was discovered; but the fact that the drainage of the barracks has since been discovered to be somewhat defective may account for them; the fourth case was that of an orderly, who had been in attendance on cases of this disease. At Dover there were three cases and one death; it is said that the disease was probably imported, and two of the men attacked were recently from Canterbury, where, as shown above, the disease was prevalent to some extent. At Aldershot there were two cases, one fatal, and at Edinburgh there was a fatal case. At Waterford there was one case, contracted in the town, which recovered; and at Great Yarmouth there was also a mild case. There were 106 admissions for mumps. The Eastern, North British, and Curragh districts escaped, but some cases occurred in all the other districts, particularly in the South-eastern, Dublin, Home, and Southern districts. The remaining admissions were 49 cases, returned as influenza, generally scattered over the kingdom, and one case of whooping cough.

*Malarial Fevers.*—The number of admissions for these fevers was 502, and there was one death. The ratio of admissions, 4·9 per 1,000, is above that in the previous year by ·7, but is below the average rate for the preceding five years by 1·4. The admissions in England alone numbered 420, or 5·9 per 1,000, an increase of ·8 on the previous year's rate; in Scotland there were only 8 admissions, or 2·2 per 1,000, a decrease of ·3, and in Ireland there were 74 admissions or 2·8 per 1,000, an increase of ·9. The districts showing the greatest prevalence of these fevers were the Southern districts, 14·4 per 1,000, Woolwich, 9·8, South-eastern, 7·0, and Eastern, 5·2. In the preceding year the same districts had the greatest prevalence of the disease, with the difference that Woolwich headed the list instead of the Southern district; the lowest

ratio of prevalence was 1·7 per 1,000 in the Channel Islands, then 2·0 in the Home district, and 2·2 in North Britain. The ratios of prevalence were also low in the Irish districts, but are all increased somewhat as compared with the results in the previous year. In England there is an increase of 4·7 in the ratio of prevalence in the Southern district, one of 1·8 in the Northern, and to a fractional extent in the Aldershot and the Home districts. In all the other districts there was a decrease, but only by a fraction, except in the case of the Eastern, in which it was 1·8. In North Britain also there was a slight decline. All the admissions but four were cases of ague, and one death is referred to this disease. Remittent fever caused one admission at Pembroke Dock, Aldershot, and Belfast respectively. One case is returned as malarial cachexia.

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*Septic Diseases.*—Under this head 218 admissions are recorded and 8 deaths, being in the ratios of 2·1 and ·08 per 1,000, slightly below the corresponding ratios in the preceding year. The admissions comprised 214 for erysipelas, 2 for pyæmia, and 2 for phagedæna. The admissions for pyæmia took place at Weymouth and Portsmouth, and those for phagedæna at Lincoln and Aldershot respectively. The admission rate for erysipelas alone, 2·0 per 1,000, is slightly below the rate in the previous year, and below the average rate. In England there were 153 cases, equal to 2·1 per 1,000, a decline of ·6 from the previous year's rate. All the districts, except the Channel Islands, were more or less affected, and the station showing the greatest number of admissions was Aldershot, 54 cases. In North Britain there were 13 cases, or 3·6 per 1,000, an increase of 1·4. In Ireland 48 cases occurred, or 1·8 per 1,000, a decline of ·2 from the rate in the preceding year. Erysipelas caused five deaths, one at Warrington, Colchester, Aldershot, Cork, and the Curragh, and pyæmia caused three deaths, one at Portsmouth, one at Weymouth, and one at Preston.

The admissions, &c. for venereal diseases are shown in the next sub-group. *Primary syphilis* alone caused 6,737 admissions, equal to a rate of 66·2 per 1,000, while 6·20 men per 1,000 were constantly sick from this disease. In the previous year the admission ratio was 73·8, and the constantly sick rate 6·72. In England the admission ratio was 69·9, and the constantly sick rate 6·56 per 1,000, the former showing a decline of 8·4, and the latter one of ·65 as compared with the corresponding ratios in the preceding year. In Scotland the admission rate was 20·7, and the constantly sick rate 1·53 per 1,000, being below the ratios in the previous year by 16·7 and 1·74 respectively. In Ireland the admission ratio was 62·6 per 1,000, a decline of 3·2, and the constantly sick rate was 5·86, a fractional increase. The greatest prevalence of primary syphilis in any district was in the Home district, the ratio of admission being 104·3 per 1,000; the Channel Islands came next with 95·6, and then the Dublin district with 90·9 per 1,000; the lowest ratio of admission was 20·7 per 1,000 in the North British district; the next above being 35·9 in the Curragh, and 42·7 in the Eastern district. Compared with corresponding results in the previous year the admission ratio has increased in the Channel Islands by 42·9 per 1,000; that in the Home district by 33·1; that in the Cork district by 13·7, and those in the South-eastern and Northern districts to a slight extent; in all other districts a decrease is observed in the admission rate, the most marked being 63·0 per 1,000 in the Aldershot district, and 33·8 in the Curragh district.

Including the sickness from simple venereal ulcer, which gave 2,742 admissions, and on account of which 203·56 men were constantly sick, the admission ratio for primary venereal sores amounted to 93·1, and the constantly sick ratio to 8·20 per 1,000. Compared with the corresponding ratios in the preceding year a decrease of 14·2 per 1,000 is observed in the admission rate, and one of ·97 in the constantly sick rate, while, compared with similar average ratios for the preceding five years, there is a decrease of 25·5 in the former and one of 1·57 in the latter. In England alone the admissions for simple venereal ulcer were 2,108, and the number constantly sick was 162·36, which, added to the sickness from primary syphilis, gave an admission rate for primary venereal sores of 99·2, and a constantly sick rate of 8·82 per 1,000, the former being less than the corresponding rate in the preceding year by 14·5, and the latter by ·99 per 1,000. In Scotland simple venereal ulcers caused 88 admissions, and 5·92 men were constantly sick; the admission rate

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for primary venereal sores was 45·3, and the constantly sick rate 3·19 per 1,000, which are considerably below the ratios in the previous year, by 26·5 and 2·42 respectively. In Ireland the admissions and constantly sick for simple venereal ulcer were 546 and 35·28 respectively, which bring up the admission ratio for primary venereal sores to 83·4, and the constantly sick rate to 7·20, the former being lower by 10·3 and the latter by ·66 than the corresponding rate in the previous year. With regard to particular districts the greatest prevalence of primary venereal sores was in the Channel Islands, the ratio of admission being as much as 142·8 per 1,000, followed by the Southern district with 120·9, and the Home district with 118·7; the lowest admission rate was in North Britain, 45·3 per 1,000, the next above being 55·7 in the Curragh, and 63·9 in the Cork district. Compared with the last year's return an increase of 42·6 is observed in the admission rate of the Channel Islands, one of 21·8 in that of the Cork district, and to some extent in the Northern, South-eastern, and Chatham districts; in all other districts a decrease is observed, particularly in the Curragh, 65·8; Aldershot, 56·8; Woolwich, 35·3; and the Eastern district, 34·3 per 1,000.

*Secondary Syphilis* caused 4,095 admissions and 12 deaths, being in the ratios of 40·3 and ·11 respectively; the ratio of constant inefficiency was 3·93 per 1,000. Compared with corresponding ratios in the preceding year a decrease of 2·3 is observed in the admission rate; but there is an increase of ·34 in the constantly sick rate, and in comparison with average ratios for the preceding five years there is an increase of 7·6 in the rate of admission, and one of 1·28 in that of constant inefficiency. In England the admission ratio for secondary syphilis was 44·4, and the constantly sick rate 4·55 per 1,000, the former showing a decrease of 1·8 and the latter an increase of ·64. In Scotland the admissions and constantly sick rates, 46·5 and 3·60 per 1,000, show considerable increase, 16·5 and 1·41 respectively. In Ireland the admission ratio, 28·0 per 1,000, has declined by 6·3 and the ratio of constantly sick, 2·26 per 1,000, by ·60. The greatest prevalence of secondary syphilis in any district was in the Channel Islands, the admission rate being 58·6 per 1,000; the next was in Aldershot, 52·5, succeeded by 51·6 in the Southern district; the least prevalence was in the Cork district, the ratio only being 20·1 per 1,000; next above being 24·5 in the Curragh, and 31·5 in the Woolwich district. Compared with the return for the preceding year an increase of 16·5 has occurred in the admission ratio in the North British district, one of 22·1 in the Channel Islands, one of 9·7 in the Eastern district, 6·7 in the Chatham district, 5·2 in the Aldershot division, and fractionally in the Western district; in all other districts a decline is observed in the admission rates, the greatest decrease being 17·4 in Woolwich, and next, 12·1, in the Dublin district. Of the deaths 6 occurred at Aldershot, 3 at Belfast, one at Woolwich, one at Parkhurst, and one at Ballincollig.

The admissions for *gonorrhœa* were 9,268 in number, being in the ratio of 91·1 per 1,000 as compared with 103·0 in the previous year, and with a quinquennial average ratio of 113·5 per 1,000; the number of men constantly sick was 616·59, or 6·06 per 1,000, which is below the last year's rate by ·28, and below the average rate by ·79. In England the admission ratio was 92·4, and the constantly sick rate 6·32 per 1,000, which are below the corresponding ratios in the preceding year by 14·6 and ·39 respectively. In Scotland the admission ratio was 72·8 per 1,000, a decline of 11·4, and the constantly sick rate 3·12, a decline of 1·15. In Ireland the admission ratio was 90·2 and the constantly sick rate 5·77 per 1,000, the former showing a decrease of 4·2 and the latter an increase of ·18 as compared with the previous year's return. The greatest prevalence of *gonorrhœa* in any district in the kingdom was in the Dublin district, the ratio of admission being 124·5 per 1,000, the next was in the Southern district, 113·2, and then 110·4 in the Eastern district; the Northern and Home districts had also high rates, 106·2 and 106·1 respectively. The lowest admission ratio for *gonorrhœa* was 57·5 per 1,000 in the Curragh district, the next above being 65·2 in the Woolwich district and 68·0 in the South-eastern district; North Britain and Aldershot also gave low ratios, 72·8 and 74·7 respectively. Compared with corresponding results in the preceding year, with the exception of an increase of 20·5 in the Cork district, and one of 4·1 in the South-eastern district, a decline has taken place in the admission

ratio for gonorrhoea in all the different districts, the greatest decrease being 51·6 in the Belfast district, 47·7 in the Channel Islands, and 35·3 in the Woolwich district. *United Kingdom.*

Taking all forms of venereal disease together the number of admissions was 22,842, and the number of men constantly inefficient on account of these diseases was 1,850. The total ratio of admission was 224·5 per 1,000, which is lower than that in the previous year by 28·4, and than that of the average of the preceding five years by 40·3. The total ratio of inefficiency from venereal affections was 18·19 per 1,000, which is below the previous year's ratio by ·91 and below the average rate by 1·08. For England alone the admission ratio was equal to 236·0 and the constantly sick rate to 19·69 per 1,000, the former showing a decline of 30·9 and the latter one of ·74 as compared with the corresponding results in the previous year. In Scotland the total admission ratio was 164·6 per 1000, a decrease of 21·4, and the constantly sick rate was 9·90, a decrease of 2·19. In Ireland the admission rate equalled 201·6, and the constant inefficiency was equal to 15·23 per 1,000; but these are also lower than the corresponding ratios in the preceding year, by 20·8 and 1·08 respectively. The greatest prevalence of venereal affections in any district was in the Channel Islands, and the admission rate was 306·7 per 1,000, the next ratio was 285·7 in the Southern district, followed by 273·1 in the Home district, 272·3 in Dublin, 240·4 in the Chatham district, 239·5 in the Western district, 237·7 in the Northern district, 227·0 in the Eastern district, 226·6 in Aldershot, 196·1 in Belfast, 185·3 in the South-eastern district, 178·9 in Woolwich, 164·6 in North Britain, 160·6 in the Cork district, and 137·7 in the Curragh district. If the above results are compared with those of the previous year an increase of 38·9 is observed in the ratio for the Cork district, one of 17·0 in that for the Channel Islands and a slight increase is observed in the South-eastern and Chatham districts, in all the remaining districts a decrease occurred, in Woolwich as much as 88·0, in the Curragh 84·4, in Belfast 81·5, in Aldershot 68·7, in the Home district 33·3, in the Eastern district 32·4, in the Western district 29·0, in the Dublin district 26·7, and in the remaining districts to a less extent.

*Parasitic diseases* were the cause of 52 admissions as compared with 72 in the previous year. All the admissions but 12 were cases of *tænia solium*; one death is reported to have occurred from *echinococcus hominis*.

In the sub-group of diseases, due to errors in diet, 12 cases of *scurvy* are returned as against 14 in the preceding year; seven of the cases were recorded in Ireland and the remainder in England.

353 admissions are returned under the head of *alcoholism*, being in the ratio of 3·6 per 1,000 which is slightly above that in the preceding year. In England the ratio was 3·7, in Scotland 6·2, and in Ireland 2·6 per 1,000, as compared with 3·2, 4·6, and 3·2 respectively in the last year's return. Of the cases treated 31 are returned as delirium tremens. Three deaths occurred, two from delirium tremens and one from alcoholism.

*Debility.*—Under this head 679 admissions are returned and 2 deaths; the admission rate was 6·7 per 1,000, being fractionally below that in the preceding year. The ratio in England was 6·9 as compared with 7·6 in the previous year; that in Scotland was 4·2 as compared with 2·8, and that in Ireland 6·4 as compared with 5·4.

*Rheumatism.*—3,758 admissions are returned and 4 deaths. The admission ratio was equal to 37·0 or 1,000 which is below the corresponding rate in the previous year by 1·8 and below the average rate for the previous five years by 4·0. The number of cases of rheumatic fever was 316, among which were three deaths. In England the admission rate was 39·1 per 1,000, in Scotland 29·4, and in Ireland 32·1, the ratios in England and Ireland have slightly decreased, but that in Scotland has somewhat increased. As in the preceding year the greatest prevalence of rheumatic affections was at Aldershot, the ratio of admission being 60·4 per 1,000; this is followed by 48·1 in the Eastern district and 36·5 in the Belfast district. The lowest admission rate was 22·0 per 1,000 in the Curragh district, the next above being 23·3 in the South-eastern district and Channel Islands respectively. Compared with the return for the preceding year an increase, though in no instance to any great extent, occurred in six of the districts, but a decrease is observed in the remainder, the most marked being 15·3 in the Dublin district, and 7·5 in the Woolwich district.

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*Tubercular Diseases.*—375 admissions and 106 deaths are returned, being in the ratios of 3·7 and 1·03 per 1,000 respectively. The admission rate is above that in the preceding year by ·1, but below that in 1886 by ·2. The death-rate shows a decrease of ·07 and ·14 respectively in these comparisons. In England the admission and death rates for tubercular diseases were 3·8 and 1·14 per 1,000, in Scotland 4·2 and ·56, and in Ireland 3·2 and ·84. Compared with the preceding year the results for England and Ireland differ very little, but in the case of Scotland the admission rate shows an increase. The greatest number of cases returned in any district was 61 in Aldershot, with 15 deaths; in the Home district there were 35 cases and 11 deaths; in the Cork district, 35 and 8 deaths; in the Southern district, 31 cases and 12 deaths; in the Northern district, 31 cases and 7 deaths; at Woolwich, 28 and 7 deaths; in the South-eastern district, 26 cases and 9 deaths; in the Western district 24 cases and 7 deaths; in the Dublin district, 23 cases and 7 deaths; in the Eastern district, 20 cases and 3 deaths; at the Curragh, 19 cases and 4 deaths; in the Chatham district, 15 and 3 deaths; in North Britain, 15 and 2 deaths; and in the Belfast district and the Channel Islands, 8 and 4 admissions respectively. 353 of the admissions and 90 of the deaths were due to tubercular disease of the lungs.

*Other diseases of the last group of general diseases* caused 538 admissions and 7 deaths, being in the ratios of 5·3 and ·07 per 1,000 respectively, which are below the corresponding ratios in the previous year. The admissions included 400 for non-malignant new growth principally of a minor character, but there were two deaths, one from sarcoma and one from tumour of the brain; there were 10 admissions for malignant disease and 4 deaths; diabetes caused 3 admissions, and the remaining cases were principally anæmia or scrofula; from the latter a death is recorded in a man detached from his corps.

*LOCAL DISEASES.—Diseases of the Nervous System.*—The admissions numbered 933 and the deaths 51, the former being in the ratio of 9·2 and the latter in that of ·49 per 1,000. Comparing the admission rate with that of the previous year an increase of ·4 has occurred, and comparing it with that of the average of the previous five years a decline of 1·3 is observed. The death-rate is higher by ·13 than in the preceding year and is slightly above the average rate. In England alone the admission ratio was 9·2 and the death rate ·57 per 1,000; in Scotland the admission rate was 8·9 and there was no mortality, and in Ireland the admission rate was 9·1 and the death rate ·38 per 1,000. Compared with corresponding ratios in the preceding year no very great difference is observed in any of the ratios. The greatest prevalence of nervous affections in any district occurred in that of Aldershot, the ratio being 12·2 per 1,000, the next being 11·4 in the Channel Islands; the least prevalence was in the Western district the ratio being 5·0, the next above being 6·5 in the Belfast district. Of the total number of admissions 148, or 1·5 per 1,000, were cases of mental disease, the ratio being the same as in the previous year. In England the ratio of mental disease was 1·2, in Scotland 2·5, and in Ireland 2·1 per 1,000. The principal causes of admission were neuralgia and epilepsy, 367 and 162 cases respectively, and among the remainder were 51 of paralysis, 21 of meningitis, and 8 of apoplexy. The causes of death were inflammation of the brain or its membranes 25 cases, apoplexy 10 cases, abscess of the brain 6, paralysis, epilepsy, tetanus and general paralysis of the insane, 2 cases each, and softening of the brain and mania one case respectively.

*Diseases of the Eye.*—The admissions were 1,223 in number, being in the ratio of 12·0 per 1,000, which is below the similar rate in the preceding year by ·4, and below the quinquennial average rate by 1·8. The ratio in England was 12·3, that in Scotland 14·0, and that in Ireland 11·0 per 1,000, as compared with 12·5, 9·1, and 12·8 per 1,000 in the preceding year. The ratio of prevalence varied considerably in the different districts, from 15·6 per 1,000 in the South-eastern district to 1·7 in the Belfast district. Very nearly two-thirds of the admissions were cases of simple conjunctivitis, and among the remaining causes, which were various, there were 97 cases returned as iritis.

*Diseases of other Organs of Special Senses.*—654 admissions are recorded, of these 36 were cases of nasal affection, and the remainder cases of aural disease. The admission rate, 6·4 per 1,000, is below the corresponding rate in the previous year by ·7, and is about the average. The ratio in England was 6·8

in Scotland 5·3, and in Ireland 5·6, all of which have declined as compared with similar rates in the previous year. Over two-thirds of the admissions were cases of inflammation of the external meatus. One death is returned from caries of the petrous portion of the temporal bone. United Kingdom.

*Diseases of the Circulatory System* caused 1,029 admissions, and 42 deaths, being in the ratio of 10·1 and ·41 per 1,000 respectively. Compared with the corresponding ratios in the previous year an increase of ·4 is observed in the admission ratio, and one of ·04 in the mortality ratio, but in comparison with similar average ratios for the previous five years a slight decline has occurred in both ratios. In England the admission rate for these diseases was 11·1, and the death rate ·43 per 1,000, as compared with 10·7 and ·37 respectively in the preceding year; in Scotland the admission rate was 9·5 and the death rate ·28 per 1,000, as compared with 9·9 and ·55; and in Ireland the ratio of admission was 7·4, and that of mortality ·38 per 1,000, as compared with 6·8 and ·36 in the previous year. With regard to the various districts the highest ratio of prevalence was 20·6 per 1,000 in the Aldershot district, the next being 12·7 in the South-eastern district; the lowest ratios were 5·3 and 5·6 in the Woolwich and Belfast districts respectively. Of the total number of admissions, almost half was due to palpitation, and of the remainder the principal causes were valvular disease of the heart, 290 cases, or 28 per cent. of the total number of admissions, varicose veins 130 cases, or 12·6 per cent., cardiac hypertrophy, 26 cases, pericarditis 25, and aneurysm 12 cases. The causes of death were valvular disease of the heart 16 cases, aneurysm 9, pericarditis 5, hypertrophy of the heart 4, fatty degeneration of the heart 2, thrombus 2, and dilatation of the heart, endocarditis, syncope, and angina pectoris one case respectively.

*Diseases of the Respiratory System* were the cause of 6,427 admissions, and 132 deaths, which give a ratio of admission equal to 63·2, and one of mortality equal to 1·28 per 1,000. The admission rate shows an increase of 6·0 over the corresponding rate in the preceding year, but a decrease of 2·2 from the average ratio of the previous five years. The death rate is above that in the previous year by ·13, but below the average rate by ·05. In England alone the admission ratio was 69·2, and the death-rate 1·36 per 1,000, as compared with 60·7, and 1·09 respectively in the preceding year; in Scotland the admission ratio was 61·0, and the mortality rate 2·24, as compared with 42·4 and 2·48 respectively; and in Ireland the ratio of admission was 46·7, and the ratio of mortality ·99 per 1,000, the corresponding ratios in the preceding year having been 49·4 and 1·23 per 1,000. Among the different districts the greatest prevalence of respiratory diseases was in the Aldershot district, the ratio of admission being 89·5 per 1,000; this is followed by 80·0 per 1,000 in the Northern district, and 76·5 in the Home district; the least prevalence of these affections was in the Channel Islands, the ratio being 35·8 per 1,000, the next above being 37·5 in the Chatham district, and 38·6 in the Curragh district. Very nearly three-fourths of the total number of admissions were due to bronchitic affections, and of the remainder the principal causes were pneumonia 994 cases, or 15·5 per cent. of the total number of admissions; pleurisy 383 cases, or 5·9 per cent.; laryngitis 82, pneumonic phthisis 74, and asthma 45 cases. The causes of death were pneumonia 88 cases, pneumonic phthisis 21, bronchitis 7, pleurisy 6, empyema 4, laryngitis 2, passive congestion of the lungs 2, pulmonary hæmorrhage 1, and gangrene of the lung 1 case.

*Diseases of the Digestive System* caused 9,535 admissions and 35 deaths, being in the respective ratios of 93·8 and ·34 per 1,000. Compared with the corresponding ratios in the preceding year a decline of 6·7 has occurred in the admission ratio, and one of ·02 in the death rate, while compared with similar average ratios for the preceding quinquennium the decline is rather more marked in each instance. Taking the three great divisions of the Kingdom it is observed that in England the ratio of admission was equal to 99·6, and the ratio of mortality to ·43 per 1,000, the former being lower by 4·7, and the latter higher by ·7 than the corresponding rate in the preceding year. In Scotland the admission ratio was 82·0, and the death-rate ·28 per 1,000, the former being lower than in the preceding year by 6·6; but with regard to the latter it is observed that there was no mortality from this

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cause in the preceding year. In Ireland the admission ratio was 79·3, and the death ratio 11 per 1,000, and compared with corresponding ratios in the preceding year a decrease of 11·8 is observed in the admission rate, and one of 33 in the mortality rate. Among the districts the highest ratios of prevalence of digestive disorders were 133·5 per 1,000 in the Aldershot district, 129·3 in the Eastern district, and 100·2 in the South-eastern district: the lowest ratios were 42·8 in the Curragh district, 70·6 in the Belfast district, and 76·6 in the Western district. Of the numerous admissions 5,914, or 62 per cent. of the whole were for affections of the mouth or throat; dyspepsia was the next most frequent cause of admission, 1,368 cases, or 14·3 per cent. of the total, being recorded. Hepatic affections were next in frequency, the admissions numbering 647, or 6·7 per cent. of the whole; these include 323 cases of jaundice and 13 of hepatic abscess. Among other diseases causing numerous admissions may be mentioned diarrhoea 492, or 5 per cent., hæmorrhoids 298, hernia, 293, &c. The deaths were—8 from hepatic abscess, 7 from peritonitis, 5 from enteritis, and 5 from cirrhosis of the liver, 3 from hepatitis, 3 from gastric ulcer, 2 from atrophy of the liver, and 1 from gastritis and jaundice respectively.

*Diseases of the Lymphatic and Glandular System.*—2,122 admissions are returned and one death. The admission ratio, 20·9 per 1,000, differs by only 2 from that in the preceding year. In England alone the admission rate was 22·8 per 1,000, which is an increase of 1·8 on the corresponding rate in the previous year; in Scotland the admission ratio was only 10·4 per 1,000, but in the previous year it did not exceed 11·0; in Ireland the ratio was 17·0, which shows a decrease of 4·0. The districts showing the greatest prevalence of these affections were the Aldershot and the Southern, the ratios of admission being 39·0 and 26·2 per 1,000 respectively, while the districts showing the least prevalence were the North British and the Dublin, with ratios of 10·4 and 11·6. The admissions under this order include those for diseases of the spleen, from which also one death is recorded.

*Diseases of the Urinary System* caused 226 admissions and 19 deaths, being in the ratios of 2·2 and 18 per 1,000, as compared with 2·1 and 19, respectively, in the preceding year. In England the admission ratio was 2·4, and the death rate 13 per 1,000, these ratios having been 2·2 and 17, respectively in the previous year; in Scotland the ratio of admission, 2·5 and that of mortality 1·12, are increased by 8 and 85; and in Ireland the admission rate, 1·8, and death-rate, 23 per 1,000, scarcely differ from the corresponding rates in the previous year. The principal causes of admission were incontinence of urine 105 cases, cystitis 31, nephritis 28, with 6 deaths, and Bright's disease 23 cases, with 11 deaths; there was also one death returned from diabetes insipidus, and one from renal abscess.

*Diseases of the Generative System.*—The admissions under this head numbered 4,606, more than half of which were cases of primary venereal sores. The admission ratio, 45·3 per 1,000, is lower than that in the preceding year by 8·3. In England the admission ratio was 47·4, in Scotland 44·5, and in Ireland 39·6 per 1,000; compared with the corresponding ratios in the preceding year a decrease is observed in all, being 8·8, 7·5, and 6·6 respectively. The districts showing the highest admission ratios were the Southern and the Channel Islands, 89·0 and 65·5 per 1,000; those showing the lowest were the Chatham, 24·8, and the South-eastern 26·1. In addition to simple venereal ulcer the principal causes of admission were orchitis 752 cases, balanitis 730, and stricture of the urethra 158 cases. One death is recorded from extravasation of urine.

*Diseases of the Organs of Locomotion.*—There were 740 admissions and 8 deaths, being in the ratios of 7·3 and 08 per 1,000 respectively. The admission ratio is higher than that in the preceding year by 5, and is also above the average rate of five years. In England the admission ratio was 7·3, in Scotland 9·0, and in Ireland 6·9 per 1,000; in the first two ratios some increase is observed, but in the last there is a decrease. The principal cause of admission was synovitis, as many as 437 cases being recorded; among the remainder were 63 of ostitis, 48 of bursitis, and 15 each of caries and necrosis. The deaths were 3 from caries, 2 from lumbar and psoas abscess respectively, and one from necrosis.

*Diseases of the Connective Tissue.*—2,259 admissions and 3 deaths are shown, being in the ratios of 22·2 and ·03 per 1,000. The admission rate differs but very slightly from the corresponding rate in the previous year, but is below the average rate. In England the admission rate, 22·6, shows but a slight difference, but in Scotland the rate, 19·6, is increased by ·9, and in Ireland the rate, 21·7, is decreased by 1·8. Abscess was the cause of death in all three instances.

*Diseases of the Cutaneous System* caused 7,633 admissions, equal to a ratio of 75·1 per 1,000, which is below the corresponding rate in the previous year by 6·3, and considerably below the average rate. In England the rate of admission, 77·8, shows a decrease of 5·9 from that in the preceding year; in Scotland the rate, 83·4, is decreased by 2·4; and in Ireland the rate, 66·3, has declined by 7·6. In the different districts the ratios vary from 105·9 per 1,000 in the Southern district to 40·5 in the Woolwich district. More than a third of the admissions were due to itch, and nearly another third to ulcers and boils. Of the remainder the principal causes of admission were eczema, whitlow, psoriasis, and herpes.

*Poisons.*—16 admissions and 2 deaths are returned as compared with 14 admissions and 5 deaths in the preceding year. Five of the admissions were for poisoning with oxalic acid, in three of the cases it was, it is believed, taken accidentally, in one case it is said that a man swallowed a solution while in a violent temper, and in the other case a man drank off some solution on being made a prisoner; all these cases recovered. There were two admissions for poisoning by cyanide of potassium, in one case the man had been drinking when he took the poison, and he recovered under treatment, the other was a case of suicide; there was also a third case, out of hospital, also one of suicide. The remaining admissions comprised five for poisoning by tobacco, and one for poisoned wound and for poisoning by alcohol, mercury, and lead, respectively; all of the cases recovered.

*Injuries.*—General injuries caused 19 admissions and 52 deaths, the numbers in the previous year having been 29 and 39 respectively. There were 8 deaths from multiple injury; among them were two resulting from gunshot injury at practice, four from being run over by railway trains, one being a case of suicide, and two resulting from falls. There were 38 deaths from drowning, 30 of which are reported as accidental, 5 as found drowned, in two cases particulars are not given, and the remaining case was that of a deserter who jumped over a bridge to avoid capture. There were two deaths from hanging, both cases of suicide; and there were four other deaths from asphyxia, two men being found dead in bed, and two suffocated by plugging of the air passages while in a state of intoxication. The admissions for general injury comprised seven for multiple injury, five for burns and scalds, four for the effects of submersion, and one for sun-stroke, exhaustion, and the effects of corrosives, respectively. Local injuries caused 9,572 admissions and 29 deaths, being in the ratios of 94·1 and ·28 per 1,000; the admission rate is slightly below the corresponding ratio in the preceding year, and below the average rate for the preceding five years. The admissions were of a very varied character, the great majority being due to contusions, wounds, or sprains; fractures, dislocations, burns, and scalds, &c. being also frequent. Among the deaths were 10 from gun-shot wound, nine being cases of suicide, and one a case of homicide, a man being shot by a comrade. Wounds caused seven deaths, of which four were cases of cut-throat, suicidal; the remaining three deaths being the result of accident. Four deaths are returned from fracture of the skull, two resulting from falls, one from the man being knocked down by a train and one from the man being thrown from a horse. One death occurred from dislocation of the cervical vertebrae, the man having fallen down the hatchway of a coal barge. Two deaths occurred from concussion of the brain and two from compression of the brain. There was also one death from concussion of the spinal cord, resulting from an accident in a gymnasium. Two deaths resulted from contusion of the abdomen, caused in one case by a kick from a horse and in the other by a kick from a mule.

214 admissions are shown under the head of no appreciable disease, being less by 48 than the number in the previous year; the ratio equalled 2·1 per 1,000.

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There were in all 18 instances of suicide during the year, among the troops serving in the United Kingdom. In the preceding year there were 11, and the average number for the previous five years was 21·4. Gun-shot was the mode of suicide adopted in half the instances of suicide, and the other half comprised four cases of cut-throat, two of poison, two of hanging, and one of multiple injury. The motive for suicide was unknown or was not given in 11 instances; in two cases money difficulty was more or less the cause, in two cases drink, in one case to avoid trial, in one depression at punishment, and in one family bereavement. A verdict of temporary insanity was recorded in 14 instances, in three instances no information was received, and in one instance the verdict was that death resulted from the effects of a self-inflicted wound. The average age of the men who committed suicide was 29 years, and the average length of service was nearly 9 years.

Among the surgical operations recorded, are an amputation of the arm on account of a gun-shot wound, an amputation of the thigh at the middle third on account of chronic synovitis and destruction of cartilage, excision of knee joint having been previously performed, an amputation of the leg on account of malignant disease, and amputation of the penis on account of epithelial cancer, and several amputations of fingers and toes; all the foregoing gave satisfactory results. There was a case of excision of the head of the femur on account of scrofulous disease, two cases of excision of part of the tarsus, one due to caries and the other to scrofula, an excision of the great toe joint on account of disease, and an excision of the metatarsal and phalangeal bones of great toe on account of comminuted fracture, all gave successful results. Aspiration of the thorax was performed in several instances, in three cases followed by incision and drainage; the results were generally satisfactory, but in one case death subsequently occurred; in four cases a portion of a rib was excised on account of empyema and these all did well. Excision of the eye-ball was performed in eight cases, in six it was necessitated by injury and in two by disease; there was one case of iridectomy, and three operations for strabismus; all gave satisfactory results. Tracheotomy was performed in three cases of diphtheria, but they all terminated fatally; in a case, however, when it was performed on account of post pharyngeal abscess a satisfactory result ensued. There was one case of removal of necrosed bone from the palate, and three of removal of non-malignant tumours. There were three cases of removal of the testicle on account of disease, and one case of removal of a renal calculus, all with successful result. Two operations for strangulated hernia were undertaken, and there was one for removal of a portion of omentum in a case of irreducible hernia, all of which were successful. There was one case of aspiration and subsequent incision on account of hepatic abscess, but it terminated fatally. In addition to those above mentioned there were several operations on account of varicose veins, varicocele, fistula in ano, hydrocele, and many others of a minor character, all of which gave satisfactory results.

*Invaliding.*—The number of men discharged the service by invaliding during the year was 1,641, being in the ratio of 15·91 per 1,000, which is greater than the corresponding ratio in the previous year by 1·11, but less than the average rate for the preceding 10 years by 6·68 per 1,000.

In England alone the invaliding rate was 17·01 per 1,000, which is above the rate in the preceding year by 1·08; in Scotland the rate, 22·40 per 1,000 shows, an increase of 7·00; and in Ireland the invaliding rate, 12·87 per 1,000, shows a fractional increase.

The most frequent causes of invaliding were, as has been noticed in previous years, diseases of the circulatory system, 322 men, or 3·12 per 1,000, being discharged on this account; the ratio is almost identical with that in the preceding year. Diseases of the nervous system come next, 220 men, or 2·13 per 1,000, being discharged for these affections, which is lower by ·8 than the previous year's rate; among these were 105 cases, or 1·02 per 1,000, of men being discharged for mental disease. Tubercular diseases caused the invaliding of 170 men, equal to 1·65 per 1,000, the same rate as in the previous year. Of these cases 167, or 1·62 per 1,000, were discharged on account of tubercular disease of the lungs. Debility caused the invaliding of 114 men, or 1·11 per 1,000, which is higher by ·23 than in the previous year. Diseases of the respiratory system invalided 100 men, equal to ·97 per

1,000 as compared with '77 in the preceding year; of these 26 men, or '25 per 1,000, were invalided on account of pneumonic phthisis. Secondary syphilis caused the invaliding of 96 men, or '93 per 1,000, an increase of '30. Diseases of the digestive system necessitated the invaliding of 97 men, or '94 per 1,000, which differs from the ratio in the previous year by only an increase of '03. Affections of the organs of locomotion caused the invaliding of 90 men, or '87 per 1,000, as compared with '73. Rheumatic affections show 79 cases of invaliding, or '77 per 1,000, as compared with '66. 75 men were invalided for the results of injury, the rate being '73 per 1,000, a decrease of '10. The remaining causes of invaliding gave still smaller rates, which differed but little from the corresponding rates in the previous year.

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Taking quinquennial periods of service it is observed that 1,116 men are shown to have been invalided within the first five years of service, the strength being 70,408 (taken from a table in the General Annual Return of the Army for 1888), the ratio per 1,000 was therefore 15'85 as compared with 13'38 in the previous year; between five and ten years' service 230 men were invalided, or 15'33 per 1,000, strength being 15,006; the ratio was lower than that in the previous year by 1'16. In the succeeding quinquennium the number of men invalided was 88 out of a strength of 5,834, the ratio being 15'08 per 1,000, an increase of 2'29 on the rate in the preceding year; between 15 and 20 years' service the invaliding rate rose to 27'48 per 1,000, which is also fractionally higher than the corresponding rate in the preceding year the number of men invalided was 133 out of a strength of 4,840; among men over 20 years, strength 2,489, the number invalided was 29'73 per 1,000, an increase of 6'31 per 1,000 on the rate in 1887.

In the first year of service only 263 men were invalided, the average strength being 20,853; the ratio was, therefore, 12'61 per 1,000, which differs only by an increase of '17 from the corresponding rate in the previous year. This does not include recruits under three months' service who were discharged as unlikely to become efficient soldiers under the provisions of para. 277*d*, section XIX., Queen's Regulations, and Orders for the Army, 1885. These are shown in the section on the recruiting of the army. Comparing the frequency of invaliding from certain causes in the first year of service with that in total service, it is found in the case of cardiac affections that the invaliding ratio was 3'07 per 1,000 in the first year of service, and 2'76 in total service; in the case of epilepsy the invaliding rate was 1'05 per 1,000, in the first year of service, and '65 in total service; mental affections gave also a higher invaliding ratio in the first year of service, 1'91 per 1,000, than in total service, 1'06, but the invaliding rate for tubercular disease of the lungs in the first year of service, '77 per 1,000, was considerably less than that in total service, 1'69. In the preceding year also the comparison of the results of invaliding from these particular causes in the first year of service and in total service was very similar to that in the year under report.

With regard to the ages of the men invalided it is observed that out of a strength of 23,049 men under 20 years of age (taken from the table above mentioned) there were 232 invalided, equal to a ratio of 10'06 per 1,000, an increase of '57 on the corresponding rate in the previous year; among men between 20 and 25 years of age, strength 46,342, there were 758 invalided, being 16'36 per 1,000, an increase of 1'79 on the last year's rate; in the next quinquennium from 25 to 30 years of age, 351 men were invalided out of a strength of 16,363, the ratio 21'45 per 1,000, showing an increase equal to 3'12; among men between 30 and 35 years, strength being 6,144, there were 83 cases of invaliding, being equal to 13'51 per 1,000, but this ratio shows a decrease of 1'76; from 35 to 40 years of age, in a strength of 4,844, there were 147 men invalided, or 30'35 per 1,000, an increase of 3'69 on the previous year's rate; and among 1,837 men over 40 years of age 70 were invalided, the ratio being 38'10 per 1,000, which is greater than in the previous year by as much as 6'09. Invaliding according to age, therefore, in the year under report increased with each quinquennial period up to 30 years of age, when a slight decrease took place, succeeded by a further increase. In the preceding year the course of invaliding according to age was precisely similar.

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The admissions, deaths, and average number constantly sick in the various military districts are shown in the following table:—

| Military Districts.           | Average Annual Strength. | Admitted into Hospital. | Died. | Average Number constantly Sick. | Ratio per 1,000 of Mean Strength. |       |                  | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. |
|-------------------------------|--------------------------|-------------------------|-------|---------------------------------|-----------------------------------|-------|------------------|------------------------------------|--------------------------------------------|
|                               |                          |                         |       |                                 | Admitted to Hospital.             | Died. | Constantly Sick. |                                    |                                            |
| 1. Northern -                 | 10,724                   | 8,289                   | 79    | 451·68                          | 772·9                             | 7·36  | 42·11            | 15·41                              | 19·94                                      |
| 2. Eastern -                  | 5,970                    | 4,854                   | 33    | 247·64                          | 813·1                             | 5·52  | 41·48            | 15·18                              | 18·67                                      |
| 3. Western -                  | 7,032                    | 5,000                   | 40    | 312·70                          | 711·0                             | 5·69  | 44·47            | 16·27                              | 22·89                                      |
| 4. Southern -                 | 8,545                    | 7,495                   | 59    | 480·92                          | 877·1                             | 6·90  | 56·28            | 20·60                              | 23·48                                      |
| 5. Chatham -                  | 3,710                    | 2,378                   | 17    | 144·61                          | 640·9                             | 4·58  | 38·97            | 14·26                              | 22·25                                      |
| 6. South-eastern -            | 7,603                    | 5,486                   | 38    | 343·64                          | 721·5                             | 4·99  | 45·20            | 16·54                              | 22·92                                      |
| 7. Home -                     | 7,515                    | 5,832                   | 42    | 397·79                          | 776·0                             | 5·59  | 52·93            | 19·37                              | 24·96                                      |
| 8. Woolwich -                 | 5,707                    | 3,432                   | 33    | 268·46                          | 601·3                             | 5·78  | 46·16            | 16·89                              | 28·09                                      |
| 9. Aldershot -                | 13,311                   | 11,485                  | 68    | 705·19                          | 862·8                             | 5·11  | 52·98            | 19·39                              | 22·47                                      |
| 10. Channel Islands           | 1,757                    | 1,267                   | 5     | 68·12                           | 721·1                             | 2·84  | 38·77            | 14·19                              | 19·68                                      |
| 11. North British -           | 3,572                    | 2,371                   | 25    | 114·03                          | 663·8                             | 7·00  | 31·92            | 11·68                              | 17·60                                      |
| 12. Belfast -                 | 4,138                    | 2,738                   | 17    | 141·53                          | 661·6                             | 4·11  | 34·20            | 12·52                              | 18·92                                      |
| 13. Dublin -                  | 9,158                    | 6,820                   | 54    | 413·41                          | 744·7                             | 5·89  | 45·14            | 16·52                              | 22·18                                      |
| 14. Cork -                    | 8,911                    | 5,949                   | 39    | 301·91                          | 667·6                             | 4·37  | 33·88            | 12·40                              | 18·57                                      |
| 15. Curragh -                 | 4,042                    | 1,949                   | 21    | 133·53                          | 482·2                             | 5·19  | 33·03            | 12·09                              | 25·07                                      |
| Total -                       | 101,695                  | 75,345                  | 570   | 4520·11                         | 740·9                             | 5·52  | 44·45            | 16·27                              | 21·96                                      |
| Average of 10 years, 1878-87. | —                        | —                       | —     | —                               | 847·3                             | 6·52  | 45·84            | 16·73                              | 19·75                                      |

\* Calculated on strength, including men detached (1,415).

The highest admission ratio in any district was 877·1 per 1,000 in the Southern district, the next being 862·8 in the Aldershot division, followed by 813·1 in the Eastern district; the lowest ratio was in the Curragh district, 482·2 per 1,000, the next above being 601·3 in the Woolwich district, and 640·9 in the Chatham district. In the preceding year also the highest and lowest admission rates were in the Southern and Curragh districts respectively. Compared with corresponding results in the previous year an increase has occurred in the admission ratios of the South-eastern district, the Aldershot division, and the Channel Islands, but a decrease is observed in those of all the remaining districts.

Mortality was highest in the Northern district, the death rate being 7·36 per 1,000; the next ratio was 7·00 in the North British district, followed by 6·90 in the Southern district; the lowest ratio of mortality was in the Channel Islands, 2·84 per 1,000, the Belfast and Cork districts also giving low ratios, 4·11 and 4·37 respectively. Compared with the return for the preceding year the death rate decreased in the South-eastern, Home, Woolwich, Belfast, Dublin, and Cork districts, and in the Channel Islands, but increased in the remainder.

The amount of constant inefficiency through sickness was greatest in the Southern district, and amounted to 56·28 per 1,000; in Aldershot the ratio equalled 52·98, and that in the Home district was almost the same, 52·93; the lowest ratio of constantly sick was 31·92 per 1,000 in the North British district. The ratios in the Curragh and the Cork district being very little higher, 33·03 and 33·88 respectively. Compared with last year's return, the ratios of constant inefficiency have increased in the Northern, Southern, South-eastern, Home, and Cork districts, and in the Channel Islands, but in all the other districts they have decreased.

The average sick time to each soldier was longest in the Southern district, 20·60 days, next in Aldershot, 19·39 days, and then in the Home district, 19·37 days; it was shortest in the North British district, 11·68 days, next in the Curragh, 12·09 days, and in the Cork district, 12·40 days. Compared with the return for the previous year the average sick time to each man was longer

in the Northern, Southern, South-eastern, Home, Channel Islands, and Cork *United Kingdom* districts; in the Chatham district there was no change, but in all the other districts it was shorter. The average duration of each case of sickness was longest at Woolwich, 28·09 days; this was also the case in the preceding year; at the Curragh it was 25·07 days, and in the Home district 24·96 days; this period was shortest in the North British district, 17·60 days, next in the Cork district, 18·57 days, and then in the Eastern district, 18·67 days. The average duration of each case of sickness was longer than the corresponding period in the previous year in the Northern, Western, Southern, Chatham, Home, Woolwich, and Curragh districts, but shorter in all the remaining districts.

In the subjoined table are shown the statistics of sickness and mortality among troops quartered in the large camps at Aldershot, Colchester, Shorncliffe, the Curragh, &c., as compared with those of troops quartered in 36 large towns, when the average strength was over 500 non-commissioned officers and men :—

| 1888. | Average Annual Strength. | Admissions. | Died. | Average constantly Sick. | Ratio per 1,000 of Mean Strength. |         |                  |
|-------|--------------------------|-------------|-------|--------------------------|-----------------------------------|---------|------------------|
|       |                          |             |       |                          | Admissions.                       | Deaths. | Constantly Sick. |
| Camps | 22,553                   | 17,923      | 100   | 1112·71                  | 794·9                             | 4·43    | ·34              |
| Towns | 54,149                   | 41,802      | 308   | 2671·40                  | 772·0                             | 5·69    | 49·33            |

From the above it will be seen that as in the previous year the ratio of constant inefficiency among troops quartered in camps is almost identical with that among men quartered in large towns, also that while the admission rate is higher among troops in camps the death rate is higher among troops living in towns, though in the previous year a similar table showed the admission and mortality rates to be both lower in camps than in towns. Comparing the ratios of sickness and mortality among troops quartered in camps during the year with those for the preceding year, it will be seen that the admission rate shows an increase of 3·4 per 1,000, and the death rate one of ·52, but the constantly sick rate is fractionally lower, while comparing the ratios of sickness and mortality of troops living in towns during the year with the previous year's results, the admission ratio has declined by 68·1, and the constantly sick rate to a fractional extent, but the death rate is higher by ·08.

The following table, compiled from the Returns of the Principal Medical Officers, shows the admissions, deaths, number of men invalided, and number constantly sick, from each arm of the service, with the ratios per 1,000 of the strength, and the corresponding ratios for the previous 10 years :—

| Arms of the Service.            | Average Strength. | Admitted into Hospital. | Died. | Discharged as Invalids. | Average Number constantly Sick. | Annual Ratio per 1,000 of Strength. |       |            |                  | Average of 10 Years, 1878-87. |       |            |                  |
|---------------------------------|-------------------|-------------------------|-------|-------------------------|---------------------------------|-------------------------------------|-------|------------|------------------|-------------------------------|-------|------------|------------------|
|                                 |                   |                         |       |                         |                                 | Admitted.                           | Died. | Invalided. | Constantly Sick. | Admitted.                     | Died. | Invalided. | Constantly Sick. |
| Household Cavalry               | 1,258             | 751                     | 5     | 20                      | 38·87                           | 599·4                               | 3·97  | 15·90      | 30·90            | 651·5                         | 3·86  | 24·25      | 34·61            |
| Cavalry                         | 10,567            | 8,319                   | 52    | 152                     | 491·48                          | 787·3                               | 4·92  | 14·38      | 46·51            | 926·4                         | 5·26  | 26·95      | 50·51            |
| Royal Artillery                 | 17,346            | 12,149                  | 110   | 307                     | 747·91                          | 700·4                               | 6·34  | 17·70      | 43·12            | 768·9                         | 7·27  | 24·40      | 45·08            |
| Royal Engineers                 | 4,187             | 2,241                   | 28    | 49                      | 132·75                          | 535·2                               | 6·69  | 11·70      | 31·71            | 594·2                         | 7·34  | 16·25      | 32·92            |
| Foot Guards                     | 5,319             | 4,402                   | 27    | 117                     | 347·57                          | 844·5                               | 5·08  | 22·00      | 65·34            | 988·9                         | 6·77  | 23·80      | 36·80            |
| Infantry                        | 46,245            | 37,726                  | 224   | 798                     | 2273·65                         | 815·8                               | 4·84  | 17·26      | 49·18            | 897·7                         | 5·87  | 23·00      | 50·22            |
| Regimental Depôts               | 10,585            | 6,570                   | 87    | 133                     | 300·46                          | 620·7                               | 8·22  | 18·56      | 23·38            | 834·7                         | 9·88  | 24·27      | 36·42            |
| Garrison Staff and Departments. | 6,188             | 3,094                   | 37    | 65                      | 187·42                          | 500·0                               | 5·98  | 10·50      | 30·29            | 611·0                         | 7·70  | 14·05      | 37·65            |

\* Including deaths of men detached.

† For nine years only.

*United Kingdom.*

The highest admission ratio of any arm of the service was in the Foot Guards and equalled 844·5 per 1,000. In the previous year the Foot Guards also gave the highest ratio of sickness. The infantry, as in the preceding year, took the second place, though if the average of 10 years be taken the second admission ratio will be found in the cavalry. The lowest ratio of admission was 500·0 per 1,000 in the Garrison Staff and Departments, the next above being 535·2 in the Royal Engineers. In the previous year these two arms also gave the lowest rates, and the same is the case with regard to the average ratios for the preceding 10 years, except that their positions are reversed. Mortality was greatest in Regimental Depôts, 8·22 per 1,000, the next ratio being 6·69 in the Engineers; the lowest ratio was 3·97 in the Household Cavalry, the next above being 4·84 in the Infantry. In the previous year and in decennial average ratios the lowest ratio was also in the Household Cavalry and the highest average rate of mortality was in Regimental Depôts, but the highest rate in 1887 was in the Foot Guards. The highest ratio of invaliding was 22·00 per 1,000 in the Foot Guards, the next being 17·70 in the Artillery; the lowest rate was 10·50 in the Garrison Staff and Departments, the next above being 11·70 in the Royal Engineers. In the previous year the highest rate was in the Artillery, but the highest average rate was in the Cavalry; the lowest ratio was in the Garrison Staff and Departments. The highest ratio of constantly sick was 65·34 per 1,000 in the Foot Guards, the next below being 49·16 in the Infantry; the lowest ratio was 28·38 in the Regimental Depôts, the rates in the Garrison Staff and Departments and Household Cavalry being only a little above. In the previous year as well among average rates the Foot Guards gave the highest rate, but the lowest was in the Household Cavalry in the previous year and in the Engineers among average rates. Compared with corresponding results for the preceding year a decrease is observed in the admission ratios of all arms of the service; except the Household Cavalry, in which there is a decrease of 2·8; the greatest decrease was 104·6 in the Regimental Depôts. Mortality declined by 1·38 in the Foot Guards and very slightly in the Household Cavalry, but increased in all other arms. Invaliding decreased in the Cavalry, Artillery, and Regimental Depôts but increased in the remaining arms of the service. The ratios increased slightly as regards constant inefficiency in the Household Cavalry, Foot Guards, and Infantry, but decreased in the remainder, though in no instance to any great extent. Compared with average ratios for the preceding decennium a decrease has occurred in the admission rates of all arms of the service; in the case of the Regimental District by as much as 214·0 per 1,000 and in that of the Foot Guards by as much as 144·4. In the Cavalry and Garrison Staff and Departments also the decline is considerable. Mortality was very slightly higher in the Household Cavalry, but the death rates of all other arms of the service show a decrease, the greatest being 1·72 in the Garrison Staff and Departments; in the Foot Guards also the decline is somewhat marked. The invaliding ratios are all lower in this comparison, the greatest decrease being 12·57 per 1,000 in the Cavalry and then 11·71 in the Regimental Depôts; the smallest decrease was 1·80 in the Foot Guards. The ratio of constant inefficiency in the Foot Guards shows an increase of 8·54 per 1,000, but the rates of all other arms of the service have declined, in the case of Regimental Depôts, by 8·04 per 1,000, and in that of the Garrison Staff and Departments by 7·36.

Abstract XXXVIII. contains a table which shows the principal health statistics of the various corps which served in the United Kingdom during the year, and the stations at which they were quartered. Of the three regiments of Household Cavalry the 1st Life Guards gave the highest ratios of sickness and mortality, the admission rate being 658·6, the death rate 7·21, and the constantly sick rate 32·95 per 1,000; the regiment was quartered in London throughout the year. The lowest ratios of admission, mortality, and constantly sick, 555·8, 2·32 and 29·60 per 1,000, were in the 2nd Life Guards, stationed three months in London and nine months at Windsor. Invaliding, on the contrary, was highest in the 2nd Life Guards, 18·60 per 1,000, and lowest in the 1st Life Guards, 14·42.

Of the regiments of cavalry, excluding the 6th Dragoon Guards, which only arrived from abroad a few weeks before the close of the year, the 13th Hussars

shows the highest ratio of admission, 1155·0 per 1,000; the regiment was stationed for three months at Manchester and nine at Leeds. The next ratio was 1078·0 in the 12th Lancers, quartered at Colchester, followed by 1062·2 in the 9th Lancers, quartered partly at York and partly at Manchester; the lowest admission ratio in any cavalry regiment was 439·5 per 1,000 in the 4th Hussars at Ballincollig, the next above being 509·7 in the 10th Hussars at Hounslow and York, and 590·8 in the 4th Dragoon Guards at Dublin and Newbridge. Mortality was greatest in the 4th Hussars, the ratio being 11·21 per 1,000, next in the 4th Dragoon Guards, 9·19, and then in the 15th Hussars quartered at Piershill, 9·01 per 1,000; in the 3rd Hussars at Cahir, in the 5th Lancers at Aldershot and Shorncliffe, and the 11th Hussars at Newbridge and Dublin, there was no mortality. The highest ratio of invaliding was 29·28 per 1,000 in the 15th Hussars, the next 27·02 in the 5th Lancers, followed by 22·98 in the 4th Dragoon Guards; in the 4th Hussars there was no invaliding, in the 11th Hussars the ratio was only 4·96, and in the 2nd Royal Dragoons at Brighton and Dundalk 5·64 per 1,000. The highest rate of constantly sick was 65·33 in the 20th Hussars at Woolwich and Norwich, the next 64·72 in the 12th Lancers, and then 58·10 in the 13th Hussars; the lowest rates were 26·88 in the 4th Hussars, 31·25 in the 10th Hussars, and 36·83 in the 5th Dragoon Guards chiefly at Dundalk and Dublin.

For the Artillery it is observed that the health statistics are not given by batteries but by brigades and divisions; among these the highest ratio of admission is found in the South Irish Division of Garrison Artillery, 966·7 per 1,000, the batteries composing it being quartered in the south of England and the Channel Islands; the next ratio was 912·9 in two batteries of the Eastern Division in the Isle of Wight, and then 898·5 in eight batteries of 4th Brigade, Field Artillery, scattered over various stations; the lowest admission rate was 198·3 in the Coast Brigade, then 274·7 in the district staff at Woolwich, and 498·4 in four batteries of the Welsh division, two being in the Western district, one in the South-eastern district, and one in Cork. The highest mortality ratio was 13·07 per 1,000 in the Southern division, the next, 11·01, in the North Irish Division, and the third 9·95 in the Eastern division; the lowest death rate was 1·49 in the Scottish division, next 4·07 in the London division, and 4·53 in the Welsh division. Invaliding was highest in the Eastern division, the rate being 27·36 per 1,000, next in the Southern division, 26·14, and then in the North Irish division, 25·70; the lowest ratio was 7·45 in the Lancashire division, then 7·55 in the Welsh division, and 10·39 in the district staff at Woolwich. The highest ratio of constant inefficiency was 56·51 per 1,000, in the Northern division, followed by 53·64 in the 3rd Brigade, Field Artillery, and 51·20 in the South Irish division; the lowest rate of constantly sick was 15·44 in the Coast Brigade, the next 22·10 in the Woolwich district staff, and 33·44 in the Welsh division.

Among the Foot Guards the highest admission and constantly sick rates were 1050·2 and 83·12 per 1,000 respectively in the 1st Battalion Coldstream Guards, quartered in London throughout the year, followed by 971·1 and 79·57 in the 2nd Battalion Scots Guards, quartered some time in London and some time in Dublin; the lowest ratios were 759·8 and 57·14 in the 1st Battalion Scots Guards, stationed eight months at Windsor and four in London; the next admission rate being 790·8 in the 1st Battalion Grenadier Guards in London, and the next constantly sick rate being 58·99 in the 2nd Battalion Coldstream Guards part of the time in Ireland and part in London. Mortality was highest in the 2nd Battalion Coldstream Guards, 10·36 per 1,000, and then in the 1st Battalion, Scots Guards, 9·80; in the 1st Battalions of the Grenadiers and Coldstream Guards there was no mortality. The highest ratio of invaliding was 30·26 per 1,000 in the 2nd Battalion Scots Guards, and the next 25·87 in the 1st Battalion Coldstream Guards; the lowest ratio was 17·00 in the 1st Battalion Scots Guards, and then 22·02 in the 2nd Battalion Coldstream Guards.

Among infantry regiments, excluding those who had an average annual strength of less than 100 men, the highest admission ratio 1481·8 is found in the 1st Battalion Yorkshire Light Infantry quartered at Gosport; the next rate was 1395·3 in the 2nd Battalion North Staffordshire Regiment quartered at

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Devonport for eight months on arrival from abroad, and the third ratio was 1296·7 in the 1st Battalion South Wales Borderers stationed in Dublin; the lowest admission ratio was 331·9 in the 1st Battalion Highland Light Infantry at the Curragh, the next being 407·1 in the 1st Battalion Royal Irish Rifles at Mullingar, and then 442·5 in the 1st Battalion Wiltshire Regiment at Athlone. The highest ratio of mortality was 12·75 per 1,000 in the 1st Battalion York and Lancaster Regiment quartered at York, the next 12·30 in the 2nd Battalion North Staffordshire Regiment, and the third 11·11 in the 2nd Battalion Royal Welsh Fusiliers at Galway; in the 1st Battalion Royal Warwickshire Regiment at Fermoy, the 2nd Battalion King's Own Scottish Borderers at Aldershot, the 2nd Battalion East Lancashire Regiment at Newry, and the 2nd Battalion Loyal North Lancashire Regiment at Jersey, there was no mortality. Invaliding was highest in the 2nd Battalion Royal Inniskilling Fusiliers at Aldershot, 43·65 per 1,000; the next rate was 40·61 in the 1st Battalion Leicestershire Regiment at York, and then 40·34 in the 2nd Battalion King's Own Scottish Borderers; in the 1st Battalion Royal Scots Fusiliers at Birr the invaliding rate was as low as 3·02 per 1,000, the next above being 4·09 in the 2nd Battalion North Staffordshire Regiment, and 5·41 in the 1st Battalion Derbyshire Regiment at Limerick. Constant inefficiency through sickness was greatest in the 1st Battalion Yorkshire Light Infantry, 93·13 per 1,000, then in the 1st Battalion South Wales Borderers the rate being 90·46, and in the 2nd Battalion North Staffordshire Regiment, 76·08; in the 1st Battalion Royal Irish Rifles the rate was as low as 17·75, in the 1st Battalion Highland Light Infantry, 21·92, and the 1st Battalion Wiltshire Regiment, 22·37.

Among regimental depôts that of the King's Own Scottish Borderers at Berwick-on-Tweed gave the high rate of admission, 1044·7 per 1,000, and the depôts of the King's Royal Rifles Corps and Rifle Brigade at Winchester that of 1211·4; the lowest ratios of admission were 237·3, and 262·5 in the depôts of the Yorkshire Regiment and Royal Irish Fusiliers at Richmond and Armagh respectively. In the depôt, Gloucestershire Regiment, at Bristol, and that of the South Lancashire Regiment at Warrington, the mortality rate reached 36·03 per 1,000, but in 22 depôts there was no mortality. The highest invaliding rate was 38·76 per 1,000 in the depôt, Royal Scots Fusiliers, at Ayr, and then 33·52 in the depôt, King's Own Scottish Borderers, but in 14 depôts there was no invaliding. The greatest amount of inefficiency through sickness was in the Rifle Depôt at Winchester, the rate being 53·81 per 1,000; the next rate was 51·96 in the depôt West Riding Regiment at Halifax; the lowest ratios of constantly sick were 6·87 in the depôt, Royal Irish Fusiliers at Armagh, and 8·87 in the depôt, Queen's Own Cameron Highlanders, at Inverness.

In order to show the influence of age on the mortality of the troops serving in the United Kingdom, the following table has been prepared showing the strength, deaths, and ratios of mortality at different ages (arranged in quinquennial periods) in the several arms of the service:—

| Arms of the Service. |                 | Under 20. | 20 and under 25. | 25 and under 30. | 30 and under 35. | 35 and under 40. | 40 and upwards. |
|----------------------|-----------------|-----------|------------------|------------------|------------------|------------------|-----------------|
| Household Cavalry    | Strength        | 78        | 469              | 373              | 132              | 73               | 30              |
|                      | Deaths          | —         | 3                | 1                | 1                | —                | —               |
|                      | Ratio per 1,000 | —         | 6·52             | 2·63             | 5·21             | —                | —               |
| Cavalry              | Strength        | 1,957     | 5,366            | 2,164            | 711              | 433              | 126             |
|                      | Deaths          | 2         | 31               | 9                | 3                | 7                | —               |
|                      | Ratio per 1,000 | 1·02      | 5·78             | 4·16             | 4·22             | 14·34            | —               |

| Arms of the Service.                   |                 | Under 20. | 20 and under 25. | 25 and under 30. | 30 and under 35. | 35 and under 40. | 40 and upwards. | United Kingdom. |
|----------------------------------------|-----------------|-----------|------------------|------------------|------------------|------------------|-----------------|-----------------|
| Royal Artillery                        | Strength        | 3,109     | 7,059            | 3,531            | 1,531            | 1,288            | 605             |                 |
|                                        | Deaths          | 12        | 30               | 29               | 21               | 14               | 4               |                 |
|                                        | Ratio per 1,000 | 3·86      | 4·24             | 8·21             | 13·71            | 10·87            | 6·61            |                 |
| Royal Engineers                        | Strength        | 647       | 1,961            | 1,039            | 456              | 313              | 133             |                 |
|                                        | Deaths          | 1         | 11               | 8                | 2                | 4                | 2               |                 |
|                                        | Ratio per 1,000 | 1·54      | 5·61             | 7·55             | 4·38             | 12·78            | 14·81           |                 |
| Foot Guards                            | Strength        | 607       | 3,020            | 1,301            | 284              | 166              | 72              |                 |
|                                        | Deaths          | 3         | 15               | 7                | 2                | —                | —               |                 |
|                                        | Ratio per 1,000 | 4·94      | 4·96             | 5·38             | 7·04             | —                | —               |                 |
| Infantry Regiments                     | Strength        | 12,518    | 22,920           | 5,387            | 1,578            | 1,283            | 433             |                 |
|                                        | Deaths          | 49        | 104              | 29               | 13               | 18               | 11              |                 |
|                                        | Ratio per 1,000 | 3·91      | 4·54             | 5·38             | 8·24             | 14·03            | 25·40           |                 |
| Regimental Depôts                      | Strength        | 3,370     | 3,217            | 1,490            | 853              | 877              | 438             |                 |
|                                        | Deaths          | 9         | 17               | 13               | 11               | 25               | 12              |                 |
|                                        | Ratio per 1,000 | 2·67      | 5·28             | 8·72             | 12·89            | 28·50            | 27·40           |                 |
| Garrison Staff and Departmental Corps  | Strength        | 763       | 2,339            | 1,058            | 539              | 356              | 73              |                 |
|                                        | Deaths          | 8         | 9                | 11               | 4                | 2                | 8               |                 |
|                                        | Ratio per 1,000 | 3·93      | 3·85             | 10·40            | 7·42             | 5·60             | 109·59          |                 |
| Average of all Troops at Home          | Strength        | 23,049    | 46,342           | 16,563           | 6,144            | 4,844            | 1,912           |                 |
|                                        | Deaths          | 79        | 220              | 107              | 57               | 70               | 37              |                 |
|                                        | Ratio per 1,000 | 3·43      | 4·75             | 6·51             | 9·28             | 14·45            | 19·35           |                 |
| Average of all Troops at Home, 1873-87 | Strength        | 193,945   | 360,433          | 161,876          | 89,263           | 72,501           | 25,739          |                 |
|                                        | Deaths          | 611       | 1,694            | 1,028            | 892              | 1,071            | 614             |                 |
|                                        | Ratio per 1,000 | 3·15      | 4·70             | 6·23             | 9·90             | 14·77            | 23·85           |                 |

This table shows that the ratios of mortality among all troops at different ages increase with each quinquennial period of age, and that the same is the case with the average ratios for the preceding 10 years. The report in the previous year also showed corresponding results. The same obtains generally in the case of the mortality ratios of the several arms of the service taken separately, entirely so in the case of the infantry, and in that of the regimental depôts up to 40 years of age, and in the Foot Guards up to 35 years of age, after which there was no mortality; in the remaining arms the ascending sequence is broken, as, for instance, in the Artillery the death rate, 13·71 per 1,000, among men between 30 and 35 years of age, being followed by one of 10·87 among men in the next quinquennial period of age. Comparing the death ratios of all troops at different ages with those of the previous year, it is observed that there is a slight increase in the ratio for each quinquennial period until the age of 40 years, after which a decrease is noticed; and comparing them with corresponding average rates for the previous 10 years, an



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increase has occurred in the death rates of men under 20 years of age, between 20 and 25 years, and between 25 and 30 years, but a decrease is observed in the death rate of men between 30 and 35 years, between 35 and 40 years, and over that age, but whether increase or decrease, the difference was but slight in any case.

The statistics of sickness and mortality among officers, women, and children, according to the several groups and orders of diseases, are shown in Abstract D., compiled from the annual returns of Principal Medical Officers of districts.

**OFFICERS.**—The average strength is shown as 3,868, the number of attacks of illness was 1,189, and there were 18 deaths. The ratio of prevalence of sickness amounted to 307·3, and that of death to 4·65 per 1,000. These ratios differ but little from the corresponding rates in the preceding year, the sick rate only showing a decrease of 1·4, and the death rate an increase of ·26 per 1,000.

**General Diseases.**—*Diseases dependent on Morbid Poisons.*—Under the head of *eruptive fevers* 23 admissions are returned, being in the rate of 5·9 per 1,000 as compared with 7·8 in the previous year; the cases comprised four of scarlet fever, one of epidemic rose rash, one of chicken-pox, and the remainder measles. *Enteric fever* was the cause of 10 admissions and 3 deaths, equal to ratios of 2·6 and ·77 per 1,000 respectively. In the previous year there were 11 cases and 1 death, the ratios being 2·8 and ·26 per 1,000. All the cases occurred in Ireland; 6 in Dublin, with 1 death; 2 in Belfast with 1 death; 1 in Kilkenny, and 1 in Cork, with 1 death. Of the cases in Dublin 2 came from the Royal Barracks, 1 from Linen Hall Barracks, 1 from Richmond Barracks, 1 from private lodgings, and 1 from Mountjoy Barracks, the last named being fatal.

Under the head of *other continued fevers* 46 attacks of illness and 1 death are returned, being in the ratios of 11·9 and ·26 per 1,000 as compared with 8·3 and *nil* respectively in the previous year; 45 of the cases were simple continued fever and occurred in various districts, and there was one case of typhus fever, which occurred in Dublin, and proved fatal.

*Dysentery* caused 7 attacks of illness, equal to 1·8 per 1,000, the same ratio as in the preceding year. Two of the cases occurred in Dublin, 2 at Woolwich, 1 at the Curragh, 1 at Birr, and 1 at Berwick-on-Tweed. Other diseases of the first sub-group gave 14 attacks of illness or 3·6 per 1,000, a decline of 1·0 from the preceding year. The cases were returned as influenza 6, mumps 6, and whooping cough 2.

*Malarial fevers* caused 41 admissions, equal to a ratio of 10·6 per 1,000, which is lower than the corresponding rate in the previous year by 5·2. Of the cases, 36 are returned as *ague* and 5 as *remittent fever*. Some cases of these fevers are returned from all the districts except North Britain, Channel Islands, and the Home district.

*Septic diseases* were represented by 4 cases of *erysipelas*, equal to 1·0 per 1,000 as compared with 1·6 in the previous year. No death occurred.

In the sub-group of *venereal disease* 43 attacks of illness are returned, equal to a ratio of 11·1 per 1,000 as compared with 10·6 in the previous year. Of the cases, 11 were primary syphilis, 2 secondary syphilis, and 30 gonorrhoea.

*Debility.*—27 cases are shown, or 7·0 per 1,000, an increase of ·8 on the rate in the previous year. One death was referred to this cause.

*Rheumatism* caused 86 admissions and one death. The ratio of sickness, 22·2 per 1,000, is greater than that in the previous year by 4·9. Only 2 of the cases were returned as *rheumatic fever*, from which also there was one death.

*Tubercular diseases* caused no illness, and *other diseases* of this group comprised 2 cases of non-malignant new growth, and 2 of *anæmia*.

**Local Diseases.**—*Diseases of the Nervous System* were the cause of 45 illnesses and 1 death, being in the ratios of 11·7 and ·26 per 1,000 as compared with 7·2 and ·52 respectively in the previous year. The cases comprised 32 of *neuralgia*, 3 of *epilepsy*, 3 of *inflammation of the brain or its membranes*, 1 of *convulsions*, and 6 of some form of *mental disease*. *Ophthalmic affections*, 19 cases, chiefly *conjunctivitis*, gave a rate of 4·9 per 1,000, an increase of 2·1.

*Diseases of the Circulatory System* caused only 7 cases of sickness, or 1·8 per 1,000, a decrease of ·8. There were, however, 2 deaths, one from aneurysm and one from valvular disease of the heart. *Respiratory diseases* caused 134 attacks of illness and 3 deaths, being in the ratios of 34·7 and ·77 per 1,000 respectively, which are lower by 6·9 and ·52 than the corresponding ratios in the preceding year; 111 of the cases were bronchial affections and the remainder comprised 9 of pneumonia, 6 of pleurisy, 5 of laryngeal affection, 2 of asthma, and one of pulmonary hæmorrhage. The deaths were due to pneumonia, bronchitis, and laryngeal disease, one case respectively.

*Diseases of the Digestive System*.—231 attacks of illness are recorded and 1 death. The ratio of sickness was 59·7 per 1,000, a decline of 6·7 from that in the preceding year. The principal causes of illness were affections of the mouth and throat, dyspepsia, and diarrhœa. Hepatic affections were less frequent than in the preceding year, 31 attacks being recorded in place of 39. One death is returned from enteritis. *Diseases of the urinary system* show 21 cases of sickness, equal to 5·4 per 1,000, an increase of 1·3 on the previous year. Cystitis was the principal cause of sickness, and among the remaining cases were 2 of Bright's disease, one of which was fatal. *Diseases of the organs of locomotion*, with a ratio of 10·1 per 1,000, and *of the connective tissue*, with a rate of 11·6, were more frequent than in the preceding year, and one death was returned under the latter head. *Cutaneous affections*, with a ratio of 13·7, were rather less frequent than in the previous year.

*Injuries* were 243 in number, being in the ratio of 62·8 per 1,000 as compared with 65·6 in the preceding year. Among the injuries were 7 of concussion of the brain, 31 of fracture, 8 of dislocation, 1 of sunstroke, and 1 of multiple injury; the remainder were chiefly contusions, wounds, or sprains, &c. Three deaths are returned, one from multiple injury, one from drowning, and one from gunshot.

**WOMEN.**—The average strength of women is shown as 10,924, the number of cases of sickness, exclusive of ordinary parturition, was 3,960, and the deaths numbered 65. The ratio of prevalence of sickness therefore was 362·5, and that of mortality 5·95 per 1,000. Compared with corresponding ratios in the preceding year, an increase of 5·5 is observed in the ratio of sickness, and one of ·41 in the ratio of mortality.

*General Diseases.*—*Diseases dependent on Morbid Poisons.*—32 cases of sickness are shown under the head of *eruptive fevers*, the ratio, 2·9 per 1,000, is below that in the previous year by 2·4. The cases comprised one of small-pox at Aldershot, 21 of measles, 6 of scarlet fever, 3 of epidemic rose rash, and one of chicken-pox. No death occurred.

*Enteric fever* was the cause of 9 attacks of illness and 3 deaths, being in the ratios of ·8 and ·28 per 1,000, as compared with 1·3 and ·29 respectively in the previous year. Of the cases 4 occurred in Dublin, one being fatal, 3 at the Curragh, 1 at Manchester, fatal, and 1 at Chester, also fatal. *Other continued fevers* show 32 attacks of illness, all cases of simple continued fever; the sick rate, 2·9 per 1,000, only differs by an increase of ·2 from that in the preceding year. *Dysentery* caused 13 cases of sickness, the ratio, 1·2 per 1,000, showing a decline of ·5. There was no death. *Other diseases of this sub-group* caused 21 cases of sickness, and comprised 12 cases of mumps, 5 of influenza, and 4 of diphtheria.

*Malarial Fevers.*—47 attacks are returned, equal to a ratio of 4·3 per 1,000, as compared with 3·4 in the preceding year. There was only one case of remittent fever recorded, all the remainder being ague.

*Septic Diseases.*—Under this head 31 attacks of illness are returned, or 2·8 per 1,000, lower by ·2 than in the previous year. Of the cases 18 were erysipelas, and the remainder puerperal septicæmia, from which also two deaths occurred.

*Venereal diseases* were represented by 2 cases of primary syphilis and 29 of secondary syphilis; the ratio of prevalence of these diseases was 2·8 per 1,000 as compared with 1·0 in the preceding year.

In the next group of diseases are recorded 10 cases of parasitic affections, chiefly ascariæ, and 4 cases under the head of alcoholism, one of which was delirium tremens.

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The ratio of sickness for *debility* was 65·6 per 1,000, an increase of 5·6 on the last year's rate. No death was returned under this head.

In the last group of general diseases, 209 attacks of illness on account of rheumatism are recorded, being in the ratio of 19·1 per 1,000, which is below the previous year's rate by 2·8. Out of the total number of cases treated 13 were rheumatic fever, but no fatal case resulted. *Tubercular diseases* caused a ratio of sickness equal to 7·1, and a rate of mortality equal to 1·37 per 1,000, as compared with 5·5 and 1·36 respectively. Of the 77 cases treated all but 8 are returned as tubercular disease of the lungs, and the whole of the 15 deaths were from this cause. The remaining cases of sickness in this group also numbered 77, and there were 5 deaths. The cases comprised 57 of *anæmia*, 6 of *scrofula*, 6 of malignant disease, 4 of non-malignant growth, 2 of diabetes, and 2 of chlorosis. Of the deaths 4 were due to cancer, and one is referred to *anæmia*.

*Local Diseases.—Diseases of the Nervous System.*—226 cases of sickness are returned under this head, and 5 deaths, being in the ratios of 20·6 and ·45 per 1,000 respectively. The sick rate is identical with that in the previous year, while the death rate has increased by ·06. 151 of the attacks of illness were neuralgic affections, and besides these the principal causes of sickness were hysteria 23 cases, epilepsy 19, and mental disease 18 cases. The deaths were due to convulsions in two cases and apoplexy in two, and one death is returned as puerperal insanity. *Ophthalmic affections* gave a sick rate of 2·1 per 1,000, an increase of ·3; out of 23 cases of sickness 16 were conjunctivitis. *Aural diseases* caused only 6 attacks of illness. *Diseases of the Circulatory System.*—63 attacks of sickness and one death are shown, the ratios being 5·8 and ·09 per 1,000, as compared with 4·7 and ·49 in the previous year. The principal causes of sickness were valvular disease of the heart, 14 cases, palpitation 12, and varicose veins 19 cases. The death was due to angina pectoris. *Diseases of the Respiratory System.*—641 cases of sickness and 16 deaths are returned, being in the ratios of 58·7 and 1·47 per 1,000 respectively. The ratio of sickness is lower than that in the previous year by 1·3, but the mortality rate is increased by ·69. Five-sixths of the cases of sickness were bronchitic affections, and of the remainder the principal were pneumonia 42 cases, pleurisy 37, and pneumonic phthisis 25 cases. The causes of death were pneumonic phthisis 7 cases, pneumonia 5, bronchitis 3, and pleurisy 1 case. *Diseases of the digestive system* caused a ratio of sickness equal to 77·8 per 1,000 and a death rate of ·55. The sick rate is decreased by 6·1 and the death rate by ·13 as compared with the corresponding rate in the previous year. Out of 850 attacks of illness 289 were affections of the mouth or throat. In addition to these the principal causes of sickness were dyspepsia 309 cases, diarrhoea 55, colic 49, constipation 37, and hepatic diseases 34 cases. There were two deaths from peritonitis, two from gastric ulcer, and two from cirrhosis of the liver. *Diseases of the lymphatic and glandular system* caused a ratio of prevalence of 1·3 per 1,000, principally cases of inflammation of glands; there was also one case of Addison's disease, which proved fatal. *Urinary affections* gave a ratio of sickness of 1·9 per 1,000, which is rather in excess of the previous year's rate. *Diseases of the Generative System.*—488 attacks of illness and 7 deaths are returned, being in the ratios of 44·7 and ·64 per 1,000; the ratio of sickness differs only by an increase of 1·2, and the death rate is increased by ·25 as compared with the results in the preceding year. Among the numerous causes of sickness may be mentioned abortion 117 cases, and premature labour 34 cases. The deaths are returned as follows:—Post-partum hæmorrhage 3 cases, abortion 2 cases, pelvic abscess and child-birth one case respectively. *Diseases of organs of locomotion* gave a sick rate of 2·2 and *diseases of connective tissue* one of 9·1 per 1,000, both being somewhat above the previous year's rates. *Cutaneous diseases*, with a ratio of 9·8 per 1,000, were about as frequent as in the preceding year, and were generally of a simple character.

*Poisons.*—Four cases are recorded, two from eating poisonous fish, one from poisoning by opium, and one from poisoning by ammonia, but no deaths occurred.

*Injuries.*—85 are recorded and 3 deaths. The ratio of frequency of occurrence, 7·8 per 1,000, is higher than that in the previous year by 1·4. The most frequent injuries were sprains, contusions, and wounds, and among the remainder were 10 cases of burn, 5 of fracture, and 4 of dislocation. The deaths are returned as one from shock and two from asphyxia, one being a case of suicide by hanging and the other, a case resulting from drink, was found dead at the bottom of the canteen steps, and was supposed to have died from asphyxia, the result of drink. United Kingdom.

*CHILDREN.*—The average strength of children was 21,215; the number of attacks of illness was 9,286, and the deaths amounted to 437. These figures give a ratio of prevalence of sickness equal to 437·7 and a ratio of mortality equal to 20·59 per 1,000. Comparing these with the corresponding ratios in the preceding year a decline of 30·8 is observed in the sick rate, and one of 5·51 in the death rate.

*General Diseases.—Diseases dependent on Morbid Poisons.*—The attacks of illness on account of *eruptive fevers* numbered 1,426, and there were 28 deaths, being in the ratios of 67·2 and 1·32 per 1,000 respectively as compared with 145·0 and 3·12 per 1,000 in the preceding year. This marked decrease is due to the diminished prevalence of measles in the year under report. Small-pox attacked one child with fatal result. The attacks of measles were 943 in number, equal to a ratio of prevalence of 44·5 per 1,000, as compared with 114·0 in the previous year. The deaths numbered 15 as compared with 47 in 1887. Measles were scattered all over the different districts, the largest number of cases being in the Southern and Cork districts. Scarlet fever attacked 245 children, or 11·5 per 1,000 as compared with 17·6 in the previous year; the deaths numbered 12, a decrease of one. Every district suffered to some extent, but some but very slightly. Epidemic rose rash gave 21 cases of sickness, and the remaining cases of eruptive fevers comprised 209 of chicken-pox and 7 of cow-pox.

*Enteric fever* caused 15 attacks of illness, but none of them had a fatal result. In the previous year there were 18 cases and 3 deaths. Of the cases 4 occurred at Dublin, 4 at the Curragh, 3 at Chester, and one case occurred at Gosport, Portsmouth, Winchester, and Hamilton respectively. *Other Continued fevers* caused 145 cases of sickness, equal to 6·8 per 1,000, which is slightly in excess of the corresponding rate in the previous year. The cases were nearly all simple continued fever, but there was one case of cerebro-spinal fever at Portsmouth, which recovered. 15 cases of dysentery are returned, and 1 death. The ratio of prevalence, 7 per 1,000, is less than half that in the preceding year. *Other diseases* of this sub-group included 26 cases of diphtheria with 10 deaths; out of these 11 cases and 4 deaths occurred at Aldershot alone. In the previous year the total number of cases was only 13. Whooping cough caused 451 cases of sickness, equal to 21·2 per 1,000, and among these were 13 deaths. The remaining attacks of illness were 210 for mumps and 25 for influenza.

*Malarial fevers* were the cause of 23 illnesses, or 1·3 per 1,000. Of the cases one was remittent fever and the rest ague.

*Septic diseases* were represented by 14 cases of erysipelas, of which one had a fatal termination.

In the sub-group of *venereal diseases* 34 cases of congenital or hereditary syphilis are returned and 4 deaths.

In the next group of diseases 115 attacks of illness due to *parasitic affections* are recorded, principally cases of intestinal worms, and there was one death from thrush.

The group of *developmental diseases* shows 545 cases of sickness and 50 deaths, being in the ratios of 25·7 and 2·36 per 1,000 as compared with 24·1 and 3·22 per 1,000 respectively. 517 of the cases and 30 deaths are referred to debility, 20 cases and 18 deaths to immaturity at birth, and malformations 3 cases and 2 deaths.

In the succeeding group of diseases 31 attacks of illness on account of *rheumatism* are recorded, but there was no death. The ratio of sickness was

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1·5 per 1,000, a slight decrease. Of the total number of cases 3 were rheumatic fever. *Tubercular affections* were at the rate of prevalence of 2·9 per 1,000, and the death rate was 1·32. Compared with the previous year's return there is an increase of ·2 in the former, but a decrease of ·19 in the latter. The cases of sickness were 61 in number, and the deaths 28; of these 24 cases and 15 deaths were due to lung affection. *Other diseases* of this group show 97 cases and 2 deaths; the cases were principally due to scrofula, anæmia, or rickets. One death was caused by diabetes and one by scrofula.

*Local Diseases.—Diseases of the Nervous System.*—264 cases of sickness are shown with 84 deaths. The ratio of sickness, therefore, was 12·4 and that of deaths 3·96 per 1,000, the former being lower by 1·6 and the latter by 1·61 than the corresponding ratio in the previous year. The most frequent cause of sickness was convulsions, 158 cases being recorded, and among remaining causes the principal were neuralgia, epilepsy, and chorea. Of the deaths 66 were caused by convulsions, and among the remainder were 11 due to inflammation of the brain or its membranes. *Diseases of the eye* caused 185 attacks of illness, principally conjunctivitis. The ratio of prevalence, 8·7 per 1,000, shows an increase of 1·6. *Aural diseases* caused 38 cases of sickness chiefly inflammation of the external meatus, and *nasal affections* caused 7 attacks of illness. *Diseases of the circulatory system* showed only 13 cases of sickness, 11 being valvular disease of the heart, 1 palpitation, and 1 endocarditis, the last-named being fatal. *Diseases of the respiratory system* were the cause of 2,888 attacks of illness and 152 deaths, being in the ratios of 136·1 and 7·16 per 1,000, which are above the corresponding ratios in the previous year by 19·2 and ·45 respectively. Bronchial affections were the cause of the greater part of the sickness, the sick rate on this account only being 126·0 per 1,000, and there were 108 deaths from bronchitis. Pneumonia was the cause of 126 cases of sickness and 24 deaths, croup 37 cases and 16 deaths, laryngitis 28 cases and 3 deaths, and pneumonic phthisis 6 cases and 1 death. *Diseases of the digestive system* caused 1,386 cases of sickness and 43 deaths, the respective ratios being 65·3 and 2·02 per 1,000, as compared with 64·8 and 3·07 in the preceding year. The principal causes of sickness were affections of the mouth and throat 674 cases, diarrhœa 390, and dyspepsia 191 cases. The causes of death were diarrhœa 13 cases, teething 9, enteritis 8, hepatic disease 4, quinsy 3, gastritis 3, and peritonitis, hernia, and intussusception one case respectively. *Diseases of the lymphatic and glandular system* show 65 attacks of illness and 2 deaths, being in the ratios of 3·1 and ·09 per 1,000, both being rather higher than in the previous year. The cases were chiefly inflammation of glands, and the deaths were due to splenitis. *Urinary affections* caused 22 cases of sickness and 6 deaths. Nephritis was the chief cause of illness and 4 deaths were due to it. The remaining deaths were due to suppression of urine and lardaceous kidney one case respectively. There was but little sickness from *diseases of the generative system or organs of locomotion*, but *diseases of the connective tissue* caused 125 attacks of illness principally abscesses, from which there was one death. *Cutaneous affections* caused 566 cases of sickness, equal to 26·7 per 1,000, which is almost identical with the corresponding rate in the previous year. The diseases causing sickness were very varied, the most frequent being eczema and ringworm.

Under the head of *poisons* is recorded one case of morphia poisoning, but there was no unfavourable result.

*Injuries.*—427 are recorded and 10 deaths, the ratios of frequency of occurrence being 20·1 and ·47 per 1,000 respectively, as compared with 15·9 and ·31 in the preceding year. The most frequent injuries were wounds, 152 cases being recorded, then burns or scalds 95, contusions 73, fractures 55, &c. The deaths are returned as follows:—5 from burns or scalds, 3 from asphyxia from overlying, one from dislocation, and one from fracture.

## VACCINATION.

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The following table shows the conditions as to vaccination of all recruits found fit for the service during the year, together with the proportion per 1,000 of each condition :—

| 1888.                                                        | Number of Recruits<br>found fit for the<br>Service. | Proportion per<br>1,000. |
|--------------------------------------------------------------|-----------------------------------------------------|--------------------------|
| Had marks of vaccination - -                                 | 25,271                                              | 950                      |
| Had marks of small-pox - -                                   | 486                                                 | 18                       |
| Had neither marks of vaccination nor<br>of small-pox - - - } | 844                                                 | 32                       |
| Total - - -                                                  | 26,601                                              | 1,000                    |

Comparing the above with the corresponding results in the previous year a decrease of 1 per 1,000 has occurred among recruits bearing marks of vaccination, an increase of 2 among those bearing marks of small-pox, and a decrease of 1 among those bearing neither marks of vaccination nor of small-pox.

The following tables, compiled from the annual returns of Principal Medical Officers, show the number of vaccinations performed during the year, with the proportions per 1,000 of successful or modified results or of failures, whether vaccinated with fresh or preserved lymph.

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| Results.                                       | Vaccinated during the year. |                 |        |                       |                 |        | Proportion per 1,000. |                 |                       |                 |         |         |
|------------------------------------------------|-----------------------------|-----------------|--------|-----------------------|-----------------|--------|-----------------------|-----------------|-----------------------|-----------------|---------|---------|
|                                                | Arm to Arm.                 |                 |        | From Preserved Lymph. |                 |        | Arm to Arm.           |                 | From Preserved Lymph. |                 |         |         |
|                                                | Primary Vaccination.        | Re-Vaccination. | Total. | Primary Vaccination.  | Re-Vaccination. | Total. | Primary Vaccination.  | Re-Vaccination. | Primary Vaccination.  | Re-Vaccination. | Total.  |         |
| <b>TABLE I.—Recruits.</b>                      |                             |                 |        |                       |                 |        |                       |                 |                       |                 |         |         |
| Perfect vaccine pustules                       | 44                          | 4,276           | 140    | 7,301                 | 184             | 11,577 | 755.7                 | 547.3           | 630.6                 | 435.5           | 601.9   | 471.0   |
| Modified vaccine pustules                      | 7                           | 1,960           | 33     | 4,603                 | 40              | 6,563  | 125.0                 | 250.8           | 146.7                 | 27.4            | 143.9   | 267.0   |
| Failures                                       | 5                           | 1,578           | 49     | 4,881                 | 54              | 6,439  | 89.3                  | 303.0           | 230.7                 | 239.9           | 194.3   | 233.0   |
| Total                                          | 56                          | 7,814           | 222    | 16,785                | 278             | 24,579 | 1,000.0               | 1,000.0         | 1,000.0               | 1,000.0         | 1,000.0 | 1,000.0 |
| <b>TABLE II.—Soldiers other than Recruits.</b> |                             |                 |        |                       |                 |        |                       |                 |                       |                 |         |         |
| Perfect vaccine pustules                       | 10                          | 897             | 60     | 1,055                 | 70              | 1,832  | 400.0                 | 384.6           | 571.4                 | 307.8           | 538.5   | 339.3   |
| Modified vaccine pustules                      | 9                           | 655             | 19     | 877                   | 28              | 1,532  | 360.0                 | 280.9           | 181.0                 | 280.9           | 215.4   | 269.1   |
| Failures                                       | 6                           | 780             | 26     | 1,450                 | 32              | 2,230  | 240.0                 | 354.5           | 247.6                 | 451.3           | 246.1   | 391.6   |
| Total                                          | 25                          | 2,532           | 105    | 3,382                 | 130             | 5,694  | 1,000.0               | 1,000.0         | 1,000.0               | 1,000.0         | 1,000.0 | 1,000.0 |
| <b>TABLE III.—Soldiers and Recruits.</b>       |                             |                 |        |                       |                 |        |                       |                 |                       |                 |         |         |
| Perfect vaccine pustules                       | 54                          | 5,173           | 200    | 8,336                 | 254             | 13,500 | 686.7                 | 509.9           | 611.6                 | 414.2           | 652.5   | 446.2   |
| Modified vaccine pustules                      | 16                          | 2,615           | 52     | 5,480                 | 68              | 8,096  | 197.5                 | 227.7           | 139.0                 | 272.3           | 166.7   | 267.4   |
| Failures                                       | 11                          | 2,358           | 75     | 6,311                 | 86              | 9,669  | 135.8                 | 232.4           | 229.4                 | 313.5           | 210.8   | 286.4   |
| Total                                          | 81                          | 10,146          | 327    | 20,127                | 408             | 29,573 | 1,000.0               | 1,000.0         | 1,000.0               | 1,000.0         | 1,000.0 | 1,000.0 |

The first table shows the vaccination of recruits only, the second that of soldiers other than recruits, and the third comprises both the foregoing. *United Kingdom.*

The total number of vaccinations performed during the year was 30,681, which is less by 4,475 than the number in the preceding year. The number of recruits vaccinated was 24,857 a decline of 5,731 from the number in 1887, but the number of soldiers other than recruits vaccinated was 5,824, an increase of 1,256.

The number of recruits found fit for service was 26,601, and the number vaccinated 24,857, showing that 1,744 recruits are not accounted for. Regarding these it is necessary to explain that some recruits who joined from the Militia, having been satisfactorily vaccinated while in that force, did not require further operation; there were some recruits who enlisted at the end of the year, whose vaccination cannot appear until the returns of the next year; and there were certain instances of desertion before vaccination was carried out.

Comparing the results of vaccination of recruits as given in Table I., with corresponding results in the preceding year it is observed that an increase of 35·7 per 1,000, has occurred in the proportion of perfect vaccine pustules in arm to arm primary vaccination, a decrease of 87·5 in the proportion of modified results, and an increase of 51·8 in the proportion of failures. In arm to arm re-vaccination the results differ but little from those in the preceding year, there being an increase of 7·3 per 1,000 in the proportion of perfect vaccine pustules, counterbalanced by a decrease of 2·2 in the proportion of modified pustules, and one of 5·1 in the proportion of failures.

In primary vaccination with preserved lymph an increase equal to 90·8 per 1,000 has occurred in the proportion of perfect results, but there was a decline of 59·3 in the proportion of modified results, and one of 31·5 in that of failures. In re-vaccination modified results increased in the proportion of 17·1 per 1,000; this was counterbalanced by a decrease of 4·1 in the proportion of perfect pustules, and one of 13·0 in the proportion of failures.

The total results of vaccination among recruits give an increase of 67·1 per 1,000 in the proportion of perfect vaccine pustules after primary vaccination, there being a decrease of 65·2 in the proportion of modified results, and one of 1·9 in that of failures. Re-vaccination in its total results gives an increase of 10·8 per 1,000 in the proportion of modified vaccine pustules, and one of 1·1 in the proportion of perfect pustules, and there was a decrease of 11·9 in the proportion of failures.

If the results of vaccination of soldiers other than recruits shown in Table II. be compared with those in the preceding year, it will be found in primary vaccination, whether with preserved lymph or arm to arm, that there was an increase of 235·1 per 1,000 in the proportion of perfect vaccine pustules, being equal to a decline of 26·0 in the proportion of modified results added to a decrease of 209·1 per 1,000 in the proportion of failures. It must be remembered that there are comparatively very few primary vaccinations among soldiers other than recruits, so that a small number more or less will vary the ratios greatly. Re-vaccination is of course more frequently performed, and with regard to it comparison shows that there was a decline of 74·5 per 1,000 in the proportion of perfect results, but an increase of 5·5 in the proportion of modified results, and one of 69·0 in that of failures.

Taking all classes of soldiers as in Table III. it will be found on comparison with the previous year's return, that in primary vaccination there was an increase of 121·4 per 1,000, in the proportion of perfect vaccine pustules, counterbalanced by a decrease of 52·8 in the proportion of modified results, and one of 68·6 in that of failures. With regard to re-vaccination there was a decrease of 16·6 per 1,000 in the proportion of perfect results, equal to an increase of 10·3 in the proportion of modified results added to one of 6·3 in the proportion of failures.

Among the total number of vaccinations of soldiers there were 13,763 perfect results, being in the proportion of 448·6 per 1,000; there were also 8,163 modified results, or 266·1 per 1,000; and there were 8,755 failures, or 285·3 per 1,000. Compared with last year's return a decline equal to 14·7 per 1,000 is observed in the proportion of perfect results, an increase of 9·5 in the proportion of modified results, and one of 5·2 in that of failures.



*United Kingdom.*

**WOMEN.**—There were only 20 instances of primary vaccination; of these 16 gave perfect results, 2 modified and 2 failures. There were, however, 444 cases of re-vaccination, of which 252, or 567·6 per 1,000, gave perfect results, 54, or 121·6 per 1,000, gave modified results, and there were 138 failures, or 310·8 per 1,000. Comparing these results with those in the previous year, there is a decline of 35·3 per 1,000 in the proportion of perfect results, and one of 52·4 per 1,000 in modified results, and an increase of 87·7 per 1,000 in the proportion of failures.

**CHILDREN.**—In 1,657 instances of arm to arm primary vaccinations there were 92 failures. The proportion of successes therefore was 944·5 per 1,000, and of failures 55·5. The proportion of successes is lower than in the previous year by 4·4 per 1,000. There were 133 arm to arm re-vaccinations, of which 105, or 789·5 per 1,000, were successful; the ratio is, however, lower than that in the previous year by 139·1.

The instances of primary vaccination with preserved lymph were 1,633, of which 1,329, or 813·8 per 1,000, were successful, an increase of 34·4 on the corresponding rate in the previous year, the proportion of failures being decreased, of course, by a similar amount. There were 215 cases of re-vaccination with preserved lymph, of which 158 were successful, equal to 734·9 per 1,000, which is an increase of 76·8. Both forms of primary vaccination gave 2,894 successful results out of 3,290 operations, the ratio of success being 879·6 per 1,000, which is higher than that in the previous year by 20·7; and both forms of re-vaccination gave 263 successful results out of 348 operations, equal to a ratio of success of 755·8 per 1,000, a decline of 23·6 in the above comparison. The total number of operations of vaccinations performed on children was 3,638; of these 3,157 were successful, being in the ratio of 867·3 per 1,000, which is higher than in the preceding year by 15·1, the proportion of failures being reduced by the same amount.

*Small-pox.*—During the year in the United Kingdom 14 men were attacked with small-pox, and one of them died; one woman and one child were also attacked, and the latter died. In the colonies 4 men were attacked, but there were no cases among women and children. In India there were 107 attacks and 10 deaths among men, 11 attacks and 1 death among women, and 17 attacks and 2 deaths among children. In Egypt there were 14 attacks and 4 deaths among men, and 2 women were attacked. The total numbers are 139 cases and 15 deaths among men, 14 cases and 1 death among women, and 18 cases and 3 deaths among children. The ratios of attacks to strength are for men ·70, for women ·90, and for children ·60 per 1,000; and the ratios of mortality are for men ·07 per 1,000, for women ·06, and for children ·10. In the preceding year the ratios of prevalence among men, women, and children were ·38, ·54, and ·61, and the ratios of mortality ·04, ·07, and *nil*, per 1,000 respectively.

## ON THE RECRUITING OF THE ARMY.

The number of recruits inspected during the year, as gathered from the Annual Returns of Principal Medical Officers of districts, was 49,172; of these 26,601 were found fit, being in the ratio of 540·98 per 1,000, and 23,571 were rejected as unfit for service, the ratio being 459·02 per 1,000.

42,524 of the recruits were inspected by Army Medical Officers only; of these 23,021, equal to a ratio of 541·37 per 1,000, were found fit for service, and 19,503, or 458·63 per 1,000, were rejected as unfit.

The remainder of the recruits inspected, 6,648, were primarily examined by civil medical practitioners, who rejected 1,380 of them, equal to 207·58 per

1,000. The number thus passed, 5,268, were referred to Army Medical Officers for secondary inspection, with the result that 1,469 more men, or 220·97 per 1,000, were rejected, leaving 3,799 men, or 571·45 per 1,000 as approved. *United Kingdom.*

The total number of men, therefore, who were rejected on inspection was 22,352, or 454·57 per 1,000, leaving 26,820 men, or 545·43 per 1,000 passed for the service. In the previous year the ratio of rejection on inspection was 452·16 per 1,000, and the ratio of approval on inspection was 547·84 per 1,000.

Under existing regulations all recruits passed for the service go through a period of probationary training before final acceptance, and it is provided by paragraph 227(d), Section XIX., Queen's Regulations and Orders for the Army, 1885, that when an attested recruit under three months' service is considered unlikely to become an efficient soldier he is to be discharged as such (and not as an invalid unless for a disability manifestly contracted in the service).

Of the recruits inspected during the year under report there were found 219, within three months of their enlistment, unlikely to become efficient soldiers, and these were discharged under the provisions of the paragraph noted above. These are added to the number of recruits rejected on inspection, making a total of 22,571, which increases the ratio of rejections to 459·02 per 1,000, and makes the ratio of finally approved recruits 540·98 per 1,000.

The following table shows the number inspected, the number rejected, and the ratios of rejections per 1,000 examined :—

TABLE I.

| Examined by                   | Number of Recruits Inspected. | Number Rejected |                                                   | Total Rejected on Inspection. | Unfit within Three Months of Enlistment. | Total Number found Unfit. |
|-------------------------------|-------------------------------|-----------------|---------------------------------------------------|-------------------------------|------------------------------------------|---------------------------|
|                               |                               | On Inspection.  | On Secondary Inspection by Army Medical Officers. |                               |                                          |                           |
| Army Medical Officers -       | 42,524                        | 19,503          | —                                                 | 22,352                        | 219                                      | 22,571                    |
| Civil Medical Practitioners - | 6,648                         | 1,380           | 1,469                                             |                               |                                          |                           |
| Total -                       | 49,172                        | 20,883          | 1,469                                             | 22,352                        | 219                                      | 22,571                    |

(continued)

| Examined by                   | Ratio of Rejections per 1,000 inspected. |                                                   |                               |                                        |                           |
|-------------------------------|------------------------------------------|---------------------------------------------------|-------------------------------|----------------------------------------|---------------------------|
|                               | On Inspection.                           | On Secondary Inspection by Army Medical Officers. | Total Rejected on Inspection. | Rejected as Unfit within Three Months. | Total Number found Unfit. |
| Army Medical Officers -       | 458·83                                   | —                                                 | 454·57                        | 4·45                                   | 459·02                    |
| Civil Medical Practitioners - | 207·58                                   | 220·97                                            |                               |                                        |                           |
| Total -                       | 424·69                                   | 220·97                                            | 454·57                        | 4·45                                   | 459·02                    |

Compared with corresponding ratios for the preceding year an increase, to a fractional extent, is observed in the proportion of rejections of recruits inspected by medical officers only, a decrease of 2·05 in the proportion of rejections of recruits primarily inspected by civil medical practitioners, an increase of 9·91 in that of recruits secondarily inspected by medical officers, and one of ·37 per 1,000 in the proportion of rejections of recruits within three months of enlistment.

United  
Kingdom.

The native countries of recruits, the ratios of rejections, and the proportion per 1,000 furnished by each country are given in the following table:—

TABLE II.

| Native Countries of Recruits.            | Examined by Army Medical Officers. |           | Primarily Examined by Civil Medical Practitioners. |           | Rejected on Secondary Inspection. | Unfit within Three Months of Enlistment. | Total.               |                                                                                               | Ratio Rejected per 1,000 Inspected. | Proportion per 1,000 Recruits furnished by each Country. |
|------------------------------------------|------------------------------------|-----------|----------------------------------------------------|-----------|-----------------------------------|------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------|
|                                          | Inspected.                         | Rejected. | Inspected.                                         | Rejected. |                                   |                                          | Primarily Inspected. | Rejected at Primary and Secondary Inspections and as unfit within Three Months of Enlistment. |                                     |                                                          |
| England and Wales                        | 32,089                             | 15,510    | 5,584                                              | 1,263     | 1,255                             | 180                                      | 38,273               | 18,203                                                                                        | 475·74                              | 778                                                      |
| Scotland - -                             | 4,066                              | 1,713     | 392                                                | 23        | 95                                | 14                                       | 4,459                | 1,845                                                                                         | 413·86                              | 91                                                       |
| Ireland - -                              | 5,187                              | 2,086     | 626                                                | 91        | 116                               | 24                                       | 5,813                | 2,317                                                                                         | 398·58                              | 118                                                      |
| British Colonies and Foreign Countries } | 582                                | 194       | 45                                                 | 2         | 3                                 | 1                                        | 627                  | 200                                                                                           | 318·93                              | 13                                                       |
| Not stated - -                           | —                                  | —         | 1                                                  | 1         | —                                 | —                                        | 1                    | 1                                                                                             | —                                   | —                                                        |
| Total - -                                | 42,524                             | 19,503    | 6,648                                              | 1,380     | 1,469                             | 219                                      | 49,172               | 22,571                                                                                        | 459·02                              | 1,000                                                    |

Compared with the return for the previous year, the ratio of rejections of recruits born in England and Wales is greater by 2·53, and that of recruits born in Scotland by 8·13 per 1,000; but the ratio of rejections of recruits born in Ireland is lower by 11, and that of recruits born in British Colonies or foreign countries by 23·88 per 1,000. Out of every 1,000 recruits inspected 778 were natives of England and Wales, 15 more than in the previous year; 91 were born in Scotland, a decrease of 5; 118 were Irishmen, a decrease of 11, and 13 were born in the colonies or foreign countries, an increase of 1.

The next table gives, as far as possible, the number of recruits examined for each arm of the service, the number rejected, the ratios of rejections, and the proportion for each arm of the service per 1,000 inspected. It has been necessary to show a certain number under the head of general service as they are shown thus in the returns, the particular arm not being stated:—

TABLE III.

| Arms of the Service.  | Examined by Army Medical Officers. |           | Primarily Examined by Civil Medical Practitioners. |                                 | Rejected at Secondary Inspection. | Unfit within three months of Enlistment. | Total.     |           | Ratio of Rejections per 1,000 of Recruits Inspected for each Arm of the Service. | Proportion for each Arm of the Service per 1,000 inspected. |
|-----------------------|------------------------------------|-----------|----------------------------------------------------|---------------------------------|-----------------------------------|------------------------------------------|------------|-----------|----------------------------------------------------------------------------------|-------------------------------------------------------------|
|                       | Inspected.                         | Rejected. | Inspected.                                         | Rejected at Primary Inspection. |                                   |                                          | Inspected. | Rejected. |                                                                                  |                                                             |
| Household Cavalry -   | 284                                | 131       | 9                                                  | 3                               | 3                                 | 3                                        | 293        | 140       | 477·81                                                                           | 6                                                           |
| Cavalry of the Line - | 3,103                              | 1,371     | 443                                                | 119                             | 95                                | 15                                       | 3,546      | 1,600     | 451·21                                                                           | 72                                                          |
| Royal Artillery -     | 5,164                              | 2,163     | 1,169                                              | 266                             | 242                               | 42                                       | 6,333      | 2,713     | 428·39                                                                           | 129                                                         |
| Royal Engineers -     | 1,238                              | 506       | 129                                                | 16                              | 28                                | 7                                        | 1,367      | 557       | 407·46                                                                           | 28                                                          |
| Foot Guards - -       | 1,354                              | 574       | 263                                                | 57                              | 73                                | 22                                       | 1,617      | 725       | 448·36                                                                           | 33                                                          |
| Infantry Regiments -  | 24,632                             | 11,544    | 4,529                                              | 916                             | 1,021                             | 124                                      | 29,161     | 13,605    | 466·55                                                                           | 593                                                         |
| Departmental Corps    | 752                                | 323       | 18                                                 | 3                               | 6                                 | 6                                        | 770        | 343       | 445·45                                                                           | 15                                                          |
| General Service -     | 5,997                              | 2,886     | 88                                                 | —                               | 2                                 | —                                        | 6,085      | 2,888     | 474·61                                                                           | 124                                                         |
| Total - -             | 42,524                             | 19,503    | 6,648                                              | 1,380                           | 1,469                             | 219                                      | 49,172     | 22,571    | 459·02                                                                           | 1,000                                                       |

Compared with the previous year's return, an increase of 4·49 per 1,000 has taken place in the ratio of rejections of recruits for the Engineers, one of 133·88 in that for the Household Cavalry, one of 29·84 in that for the Foot Guards, one of 4·36 in that for the Infantry, one of 10·97 in that for Departmental Corps, and one of 8·78 in that for General Service; but a decrease of 6·22 per 1,000 is observed in the ratio of rejections for the Cavalry, and one of 19·88 in that for the Artillery.

*United Kingdom.*

The proportion of recruits for each arm of the service per 1,000 inspected compared with corresponding results in the preceding year shows an increase of 8 in the Cavalry, one of 4 in the Artillery, one of 4 in the Engineers, and one of 5 in the Infantry, while a decrease of 16 is observed in Departmental Corps, and one of 5 in General Service, but in the Household Cavalry and Foot Guards the proportions remained the same.

In the next table are given the occupations of recruits previous to enlistment, the ratio rejected per 1,000 in each group of occupations, and the proportion of each group in every 1,000 recruits inspected:—

TABLE IV.

| Occupations of Recruits.                                                                                      | Number Inspected. | Number Rejected. | Ratio Rejected per 1,000 Inspected. | Proportion of each Group in 1,000 Recruits Inspected. |
|---------------------------------------------------------------------------------------------------------------|-------------------|------------------|-------------------------------------|-------------------------------------------------------|
| 1. Labourers, Servants, Husbandmen, &c.                                                                       | 30,311            | 13,963           | 460·63                              | 616                                                   |
| 2. Manufacturing Artizans (as Clothworkers, Weavers, Laco Makers, &c.).                                       | 7,698             | 3,878            | 503·76                              | 157                                                   |
| 3. Mechanics employed in Occupations favourable to physical development (as Smiths, Carpenters, Masons, &c.). | 5,903             | 2,728            | 462·14                              | 120                                                   |
| 4. Shopmen and Clerks - -                                                                                     | 3,219             | 1,580            | 490·83                              | 66                                                    |
| 5. Professional Occupations, Students, &c.                                                                    | 609               | 214              | 351·40                              | 12                                                    |
| 6. Boys under 17 years of age - -                                                                             | 1,423             | 204              | 143·35                              | 29                                                    |
| Not stated - - -                                                                                              | 9                 | 5                | —                                   | —                                                     |
| Total - - -                                                                                                   | 40,172            | 22,571           | 459·02                              | 1,000                                                 |

Compared with corresponding results for the previous year an increase of 31·11 per 1,000 is observed in the ratio of rejections in Class 2, manufacturing artizans, and one of 33·37 in Class 3, mechanics, &c., while in Class 1, labourers, &c., there is a decrease equal to 5·04 per 1,000, in Class 4, shopmen and clerks, a decrease of 6·41, in Class 5, professional occupations, a decrease of 36·11, and in Class 6, boys under 17 years of age, one of 7·16.

The proportions of the different classes of occupations among 1,000 recruits inspected as compared with corresponding results in 1887 show an increase of 7 in Class 2, artizans, one of 4 in Class 3, mechanics, one of 3 in Class 4, shopmen and clerks, and one of 7 in Class 6, boys under 17 years of age, while a decrease of 19 has occurred in Class 1, labourers, &c., and one of 2 in Class 5, professional occupations.

Table No. 5 shows the number of recruits rejected in 1888, with the causes of rejections arranged in classes, and the ratio per 1,000 in each class.

TABLE V.

| Causes of Rejections,<br>in Classes.                                                     | Examined<br>by Army<br>Medical<br>Officers. |                                         | Examined by Civil Medical<br>Practitioners.                                                  |                                      |                                                                                          |                                      | Total examined.                                              |                                                                    |                                                  |                                         |
|------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------|
|                                                                                          | 42,524                                      |                                         | 6,648                                                                                        |                                      |                                                                                          |                                      | 49,172                                                       |                                                                    |                                                  |                                         |
|                                                                                          | Number<br>Re-<br>jected.                    | Ratio<br>per<br>1,000<br>Re-<br>jected. | Number<br>Rejected<br>by Civil<br>Medical<br>Practi-<br>tioners at<br>Primary<br>Inspection. | Ratio<br>per 1,000<br>Re-<br>jected. | Number<br>Rejected<br>by Army<br>Medical<br>Officers<br>at Se-<br>condary<br>Inspection. | Ratio<br>per<br>1,000 Re-<br>jected. | Total<br>Number<br>Re-<br>jected<br>on In-<br>spec-<br>tion. | Ratio<br>per<br>1,000<br>Re-<br>jected<br>on In-<br>spec-<br>tion. | Unit within first<br>Three Months of<br>Service. | Ratio<br>per<br>1,000<br>Re-<br>jected. |
| 1. Syphilis - - -                                                                        | 209                                         | 7.06                                    | 53                                                                                           | 8.72                                 | 23                                                                                       | 3.46                                 | 380                                                          | 7.73                                                               | 3                                                | .04                                     |
| 2. Scrofula - - -                                                                        | 113                                         | 2.66                                    | 31                                                                                           | 4.66                                 | 21                                                                                       | 3.16                                 | 165                                                          | 3.36                                                               | —                                                | —                                       |
| 3. Phthisis - - -                                                                        | 72                                          | 1.69                                    | 15                                                                                           | 2.28                                 | 5                                                                                        | .75                                  | 92                                                           | 1.87                                                               | 6                                                | .12                                     |
| 4. Impaired Constitution                                                                 | 193                                         | 4.66                                    | 9                                                                                            | 1.35                                 | 17                                                                                       | 2.56                                 | 324                                                          | 4.56                                                               | —                                                | —                                       |
| 5. Other General Diseases                                                                | 79                                          | 1.86                                    | 68                                                                                           | 10.23                                | 10                                                                                       | 1.51                                 | 157                                                          | 3.19                                                               | 7                                                | .14                                     |
| 6. Diseases of Nervous<br>System.                                                        | 17                                          | .40                                     | 3                                                                                            | .45                                  | 9                                                                                        | 1.35                                 | 29                                                           | .59                                                                | 27                                               | .55                                     |
| 7. Weakness of Intellect -                                                               | 83                                          | 1.95                                    | —                                                                                            | —                                    | 21                                                                                       | 3.16                                 | 104                                                          | 2.12                                                               | 23                                               | .45                                     |
| 8. Defective Vision - - -                                                                | 1,576                                       | 37.06                                   | 119                                                                                          | 17.90                                | 102                                                                                      | 15.34                                | 1,797                                                        | 36.55                                                              | 1                                                | .02                                     |
| 9. Disease of Eyes and<br>Eyelids.                                                       | 85                                          | 2.00                                    | 16                                                                                           | 2.41                                 | 20                                                                                       | 3.01                                 | 121                                                          | 2.46                                                               | 3                                                | .06                                     |
| 10. Disease of Nose and<br>Mouth.                                                        | 43                                          | 1.01                                    | —                                                                                            | —                                    | 8                                                                                        | 1.20                                 | 51                                                           | 1.04                                                               | —                                                | —                                       |
| 11. Disease of Ears - - -                                                                | 50                                          | 1.18                                    | 1                                                                                            | .15                                  | 4                                                                                        | .60                                  | 55                                                           | 1.12                                                               | 3                                                | .04                                     |
| 12. Deafness - - -                                                                       | 54                                          | 1.27                                    | 4                                                                                            | .60                                  | 8                                                                                        | 1.20                                 | 66                                                           | 1.34                                                               | 1                                                | .02                                     |
| 13. Impediment of Speech -                                                               | 78                                          | 1.83                                    | 1                                                                                            | .15                                  | 6                                                                                        | .90                                  | 85                                                           | 1.73                                                               | 1                                                | .02                                     |
| 14. Disease of Heart - - -                                                               | 840                                         | 19.97                                   | 125                                                                                          | 18.90                                | 50                                                                                       | 7.52                                 | 1,024                                                        | 20.82                                                              | 27                                               | .55                                     |
| 15. Disease of Arteries<br>(Aneurysm).                                                   | 2                                           | .06                                     | —                                                                                            | —                                    | —                                                                                        | —                                    | 2                                                            | .04                                                                | —                                                | —                                       |
| 16. Disease of Veins (Varix)                                                             | 714                                         | 16.79                                   | 80                                                                                           | 12.03                                | 49                                                                                       | 7.37                                 | 843                                                          | 17.14                                                              | 6                                                | .12                                     |
| 17. Disease of Lungs (ex-<br>cept Phthisis).                                             | 42                                          | .99                                     | 61                                                                                           | 9.18                                 | 3                                                                                        | .45                                  | 106                                                          | 2.15                                                               | 3                                                | .06                                     |
| 18. Loss or Decay of many<br>Teeth.                                                      | 483                                         | 11.36                                   | 23                                                                                           | 3.31                                 | 48                                                                                       | 7.23                                 | 553                                                          | 11.25                                                              | —                                                | —                                       |
| 19. Hernia - - -                                                                         | 253                                         | 5.95                                    | 67                                                                                           | 10.09                                | 20                                                                                       | 3.01                                 | 360                                                          | 7.32                                                               | 11                                               | .23                                     |
| 20. Laxity of Abdominal Rings                                                            | 97                                          | 2.28                                    | 8                                                                                            | .45                                  | 5                                                                                        | .75                                  | 105                                                          | 2.13                                                               | 1                                                | .02                                     |
| 21. Hemorrhoids - - -                                                                    | 95                                          | 2.23                                    | 9                                                                                            | 1.35                                 | 6                                                                                        | .90                                  | 110                                                          | 2.24                                                               | —                                                | —                                       |
| 22. Diseases of the Urinary<br>Organs.                                                   | 26                                          | .61                                     | 1                                                                                            | .15                                  | 3                                                                                        | .45                                  | 30                                                           | .61                                                                | 6                                                | .12                                     |
| 23. Varicocele - - -                                                                     | 623                                         | 14.77                                   | 160                                                                                          | 24.07                                | 28                                                                                       | 4.21                                 | 816                                                          | 16.59                                                              | 9                                                | .18                                     |
| 24. Other Diseases of the<br>Genital Organs (not<br>Gyphilitic).                         | 83                                          | 1.95                                    | 30                                                                                           | 4.51                                 | 5                                                                                        | .75                                  | 118                                                          | 2.40                                                               | —                                                | —                                       |
| 25. Defects of Upper Ex-<br>tremities, from Frac-<br>ture, Contraction,<br>Luxation, &c. | 247                                         | 5.81                                    | 13                                                                                           | 1.90                                 | 41                                                                                       | 6.17                                 | 300                                                          | 6.10                                                               | 4                                                | .08                                     |
| 26. Defects of Lower Ex-<br>tremities, from Frac-<br>ture, Contraction,<br>Luxation, &c. | 630                                         | 14.82                                   | 39                                                                                           | 5.87                                 | 71                                                                                       | 10.68                                | 740                                                          | 15.05                                                              | 5                                                | .10                                     |
| 27. Flat Feet - - -                                                                      | 500                                         | 13.88                                   | 38                                                                                           | 5.72                                 | 58                                                                                       | 8.73                                 | 696                                                          | 13.95                                                              | 11                                               | .23                                     |
| 28. Diseases of Joints - - -                                                             | 76                                          | 1.79                                    | 4                                                                                            | .60                                  | 8                                                                                        | 1.20                                 | 88                                                           | 1.79                                                               | 3                                                | .06                                     |
| 29. Other Affections of<br>Bones and Muscles.                                            | 73                                          | 1.72                                    | 5                                                                                            | .75                                  | 9                                                                                        | 1.35                                 | 87                                                           | 1.77                                                               | —                                                | —                                       |
| 30. Ulcers, Wounds, and<br>Cicatrices.                                                   | 103                                         | 2.42                                    | 15                                                                                           | 2.26                                 | 16                                                                                       | 2.41                                 | 134                                                          | 2.72                                                               | 2                                                | .04                                     |
| 31. Other Affections of the<br>Cutaneous System.                                         | 173                                         | 4.04                                    | 75                                                                                           | 11.28                                | 13                                                                                       | 1.96                                 | 260                                                          | 5.29                                                               | 2                                                | .04                                     |
| 32. Malformation of Ears -                                                               | —                                           | —                                       | —                                                                                            | —                                    | 1                                                                                        | .15                                  | 1                                                            | .02                                                                | —                                                | —                                       |
| 33. Malformation of Nose<br>and Mouth.                                                   | 17                                          | .40                                     | —                                                                                            | —                                    | 1                                                                                        | .15                                  | 18                                                           | .37                                                                | —                                                | —                                       |
| 34. Malformation of Chest<br>and Spine.                                                  | 382                                         | 8.96                                    | 61                                                                                           | 9.18                                 | 35                                                                                       | 5.27                                 | 478                                                          | 9.72                                                               | 3                                                | .06                                     |
| 35. Malformation of Uri-<br>nary or Genital Organs.                                      | 22                                          | .52                                     | —                                                                                            | —                                    | 2                                                                                        | .30                                  | 24                                                           | .49                                                                | —                                                | —                                       |
| 36. Marks of Punishment,<br>or of letter D. or B.C.                                      | 1                                           | .02                                     | —                                                                                            | —                                    | —                                                                                        | —                                    | 1                                                            | .02                                                                | —                                                | —                                       |
| 37. Under Height - - -                                                                   | 1,338                                       | 31.46                                   | 23                                                                                           | 3.46                                 | 96                                                                                       | 14.44                                | 1,457                                                        | 29.63                                                              | 6                                                | .12                                     |
| 38. Under Chest Measure-<br>ment.                                                        | 7,074                                       | 166.35                                  | 103                                                                                          | 15.49                                | 380                                                                                      | 57.16                                | 7,557                                                        | 153.69                                                             | 31                                               | .63                                     |
| 39. Under Weight (Mus-<br>cular Tenuity and<br>Debility).                                | 1,934                                       | 45.48                                   | 85                                                                                           | 12.79                                | 175                                                                                      | 26.32                                | 2,194                                                        | 44.62                                                              | 15                                               | .31                                     |
| 40. Apparent Age not in<br>accordance with Gen-<br>eral Order.                           | 506                                         | 11.90                                   | 14                                                                                           | 2.11                                 | 67                                                                                       | 10.08                                | 587                                                          | 11.94                                                              | 1                                                | .02                                     |
| 41. Not likely to become<br>efficient.                                                   | 228                                         | 6.77                                    | 3                                                                                            | .45                                  | 23                                                                                       | 3.51                                 | 317                                                          | 6.44                                                               | 2                                                | .04                                     |
| 42. Over height - - -                                                                    | 27                                          | .63                                     | —                                                                                            | —                                    | 3                                                                                        | .45                                  | 30                                                           | .61                                                                | —                                                | —                                       |
| Not stated - - -                                                                         | 4                                           | .09                                     | —                                                                                            | —                                    | —                                                                                        | —                                    | —                                                            | —                                                                  | —                                                | —                                       |
| Total Rejected - - -                                                                     | 19,503                                      | 458.63                                  | 1,380                                                                                        | 207.58                               | 1,469                                                                                    | 220.96                               | 21,352                                                       | 464.57                                                             | 219                                              | 4.45                                    |

Out of the total number of rejections on inspection 11,208, or rather more than half, were due to defective development, the men being either under the height, weight, or chest measurement laid down by regulation. The ratio of rejections on inspection on this account was 227·94 per 1,000, as compared with 226·19 in the previous year. The highest ratio of rejections was on account of defective chest measurement, 153·69 per 1,000, being an increase of 5·19, the ratio of rejections for being under the weight laid down by regulation was 44·62 per 1,000, an increase of 2·02; and the ratio of rejections for being under height was 29·63, a decrease of 5·46. Defective vision also caused a high ratio of rejection, 36·55 per 1,000, but is slightly below that in the previous year. Among other causes of rejection the following give the highest ratios: cardiac affections 20·82 per 1,000, varicose veins and varicocele 17·14 and 16·59 respectively, defects of the lower extremities 15·05, flat feet 13·95, decay of teeth 11·25, and malformation of chest 9·72 per 1,000. In the preceding year the above were also the most frequent causes of rejection, and there is great similarity in the ratios. For the above, and indeed in nearly all the ratios of rejections on inspection, a small addition is shown due to a certain number of men being found unfit for service within three months of enlistment. The more frequent causes of rejection in this manner were—under chest measurement 31 cases, nervous affections and cardiac disease 27 each, and weakness of intellect 22 cases; the ratios in all instances were only fractional. As usual, a considerable difference is noticed between the ratios of rejections by medical officers and those by civil practitioners, particularly marked in the instance of deficient development, the ratio of rejection on account of under chest measurement being 166·35 per 1,000 by medical officers and 15·49 by civil practitioners; defective vision also shows a marked difference the ratio of rejection by medical officers being 37·06 per 1,000, and that by civil practitioners 17·90. On the other hand it is observed that the ratios of rejections by civil practitioners on account of hernia and varicocele, 13·09 and 24·07 per 1,000 respectively, are a good deal higher than the corresponding ratios of rejections by medical officers.

*Ages, Heights, Weights, and Chest Measurements of Recruits finally approved for Service during the Year.*

In the following table are shown the ages of all recruits finally approved for service, and the proportion of each age per 10,000 :—

TABLE VI.

| Ages.                |   |   |   | Numbers finally approved for Service. | Proportion per 10,000. |
|----------------------|---|---|---|---------------------------------------|------------------------|
| Boys under 17 years  | - | - | - | 1,335                                 | 464                    |
| From 17 to 18        | " | - | - | 242                                   | 91                     |
| " 18 to 19           | " | - | - | 11,912                                | 4,215                  |
| " 19 to 20           | " | - | - | 5,429                                 | 2,041                  |
| " 20 to 21           | " | - | - | 2,870                                 | 1,079                  |
| " 21 to 22           | " | - | - | 1,952                                 | 784                    |
| " 22 to 23           | " | - | - | 1,499                                 | 563                    |
| " 23 to 24           | " | - | - | 1,077                                 | 405                    |
| " 24 to 25           | " | - | - | 898                                   | 338                    |
| 25 years and upwards | - | - | - | 187                                   | 70                     |
| Total                | - | - | - | 26,601                                | 10,000                 |

United  
Kingdom.

From the above it is observed that, as was the case in the preceding years, the age at which the greatest number of recruits were accepted was between 18 and 19 years, and that out of every 10,000 recruits finally approved, as many as 4,215 were of that age, followed by 2,041 between 19 and 20 years of age, and by 1,079 between 20 and 21 years of age. Compared with corresponding results in the previous year an increase is observed in the proportions of recruits at ages under 20 years and a decrease in the proportions of recruits at the different ages over 20 years.

The next table gives the heights of recruits finally approved, and the proportion of each height per 10,000. It also gives the heights of recruits finally approved, arranged in series according to age, together with the proportion per 10,000 of each height at each age :—

TABLE VII.

| Heights of Recruits finally approved for Service. |               | Boys under 17 Years. | Between 17 and 18. | Between 18 and 19. | Between 19 and 20. | Between 20 and 21. | Between 21 and 22. | Between 22 and 23. | Between 23 and 24. | Between 24 and 25. | 25 Years and upwards. | Totals at each Height. |
|---------------------------------------------------|---------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|------------------------|
| ft. in.                                           | ft. in.       |                      |                    |                    |                    |                    |                    |                    |                    |                    |                       |                        |
| Under 5                                           | 3             | 1,029                | 23                 | 21                 | 1                  | 1                  | 5                  | 2                  | 1                  | —                  | 2                     | 1,035                  |
| 5                                                 | 3 to 5        | 86                   | 42                 | 801                | 233                | 77                 | 37                 | 21                 | 25                 | 19                 | 8                     | 1,342                  |
| 5                                                 | 4 to 5        | 52                   | 61                 | 3,489              | 1,311              | 496                | 304                | 189                | 138                | 117                | 17                    | 6,184                  |
| 5                                                 | 5 to 5        | 35                   | 48                 | 2,824              | 1,324              | 642                | 434                | 309                | 214                | 166                | 37                    | 6,033                  |
| 5                                                 | 6 to 5        | 20                   | 32                 | 1,639              | 936                | 553                | 367                | 308                | 186                | 165                | 34                    | 4,238                  |
| 5                                                 | 7 to 5        | 4                    | 14                 | 1,183              | 687                | 434                | 306                | 249                | 196                | 150                | 29                    | 3,252                  |
| 5                                                 | 8 to 5        | 3                    | 7                  | 699                | 451                | 336                | 225                | 196                | 148                | 131                | 23                    | 2,219                  |
| 5                                                 | 9 to 5        | 4                    | 6                  | 337                | 283                | 170                | 139                | 119                | 79                 | 68                 | 21                    | 1,226                  |
| 5                                                 | 10 to 5       | 1                    | 5                  | 113                | 116                | 86                 | 66                 | 52                 | 51                 | 46                 | 12                    | 548                    |
| 5                                                 | 11 to 6       | 1                    | 3                  | 63                 | 51                 | 46                 | 35                 | 27                 | 23                 | 21                 | 3                     | 273                    |
| 6                                                 | 0 and upwards | —                    | 1                  | 33                 | 36                 | 29                 | 34                 | 29                 | 16                 | 13                 | 1                     | 194                    |
| Totals at each age                                |               | 1,235                | 242                | 11,212             | 5,429              | 2,870              | 1,952              | 1,439              | 1,077              | 898                | 187                   | 26,601                 |

| Heights of Recruits finally approved for Service. |               | Proportions per 10,000 at each Age. |                    |                    |                    |                    |                    |                    |                    |                    |                       | Total Proportion of each Height per 10,000 inspected. |
|---------------------------------------------------|---------------|-------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|-------------------------------------------------------|
|                                                   |               | Boys under 17 Years.                | Between 17 and 18. | Between 18 and 19. | Between 19 and 20. | Between 20 and 21. | Between 21 and 22. | Between 22 and 23. | Between 23 and 24. | Between 24 and 25. | 25 Years and upwards. |                                                       |
| ft. in.                                           | ft. in.       |                                     |                    |                    |                    |                    |                    |                    |                    |                    |                       |                                                       |
| Under 5                                           | 3             | 8,332                               | 950                | 19                 | 2                  | 4                  | 26                 | 13                 | 9                  | —                  | 107                   | 408                                                   |
| 5                                                 | 3 to 5        | 697                                 | 1,736              | 714                | 429                | 268                | 190                | 140                | 232                | 212                | 423                   | 507                                                   |
| 5                                                 | 4 to 5        | 421                                 | 2,521              | 3,121              | 2,415              | 1,728              | 1,557              | 1,261              | 1,281              | 1,303              | 909                   | 2,325                                                 |
| 5                                                 | 5 to 5        | 284                                 | 1,983              | 2,519              | 2,439              | 2,237              | 2,223              | 2,061              | 1,987              | 1,849              | 1,979                 | 2,268                                                 |
| 5                                                 | 6 to 5        | 162                                 | 1,322              | 1,462              | 1,724              | 1,927              | 1,880              | 2,041              | 1,727              | 1,837              | 1,818                 | 1,563                                                 |
| 5                                                 | 7 to 5        | 33                                  | 579                | 1,055              | 1,365              | 1,512              | 1,568              | 1,661              | 1,820              | 1,670              | 1,551                 | 1,223                                                 |
| 5                                                 | 8 to 5        | 24                                  | 289                | 624                | 631                | 1,171              | 1,153              | 1,308              | 1,374              | 1,459              | 1,230                 | 814                                                   |
| 5                                                 | 9 to 5        | 32                                  | 248                | 300                | 521                | 592                | 712                | 794                | 733                | 757                | 1,123                 | 461                                                   |
| 5                                                 | 10 to 5       | 8                                   | 207                | 101                | 214                | 300                | 338                | 347                | 474                | 512                | 642                   | 206                                                   |
| 5                                                 | 11 to 6       | 8                                   | 124                | 56                 | 94                 | 180                | 179                | 180                | 214                | 234                | 160                   | 108                                                   |
| 6                                                 | 0 and upwards | —                                   | 41                 | 29                 | 66                 | 101                | 174                | 194                | 149                | 167                | 53                    | 73                                                    |
| Total                                             |               | 10,000                              | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000                | 10,000                                                |

Compared with corresponding results for the preceding year an increase of 90 is observed in the proportion of recruits under 5 feet 3 inches in height per 10,000 approved, of 122 between 5 feet 3 inches and 5 feet 4 inches, of 48 between 5 feet 4 inches and 5 feet 5 inches, and of 5 over 6 feet in height, but a decrease of 33 has occurred in recruits between 5 feet 5 inches and 5 feet 6 inches, one of 39 between 5 feet 6 inches and 5 feet 7 inches, one of 45 between 5 feet 7 inches and 5 feet 8 inches, one of 44 between 5 feet 8 inches and 5 feet 9 inches, one of 66 between 5 feet 9 inches and 5 feet 10 inches, one of 11 between 5 feet 10 inches and 5 feet 11 inches, and one of 17 between 5 feet 11 inches and 6 feet.

Omitting boys, the highest proportion of recruits at any age of any height per 10,000 finally approved was 3,121 between 18 and 19 years of age, and 5 feet 4 inches to 5 feet 5 inches in height. A similar result occurred in the previous year.

The next table gives the weights of the recruits who were finally approved, and the proportion of each weight per 10,000. It also shows the weights of these recruits arranged in series according to age, together with the proportion per 10,000 of each weight at each age :—

TABLE VIII.

| Weights of Recruits finally approved for Service. | Boys under 17 Years. | Between 17 and 18. | Between 18 and 19. | Between 19 and 20. | Between 20 and 21. | Between 21 and 22. | Between 22 and 23. | Between 23 and 24. | Between 24 and 25. | 25 Years and upwards. | Totals at each Weight. |
|---------------------------------------------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|------------------------|
| Under 100 lbs.                                    | 987                  | 2                  | —                  | —                  | —                  | —                  | —                  | 1                  | —                  | —                     | 1,000                  |
| 100—110 lbs.                                      | 153                  | 21                 | 39                 | 21                 | 3                  | —                  | —                  | 2                  | —                  | 1                     | 240                    |
| 110—120 „                                         | 64                   | 66                 | 2,338              | 816                | 303                | 156                | 93                 | 53                 | 25                 | 12                    | 4,426                  |
| 120—130 „                                         | 17                   | 87                 | 4,803              | 1,969              | 834                | 500                | 304                | 218                | 149                | 30                    | 8,911                  |
| 130—140 „                                         | 4                    | 40                 | 2,574              | 1,583              | 927                | 658                | 510                | 323                | 231                | 58                    | 6,917                  |
| 140—150 „                                         | —                    | 14                 | 728                | 708                | 543                | 415                | 333                | 257                | 277                | 39                    | 3,314                  |
| 150—160 „                                         | —                    | 2                  | 164                | 251                | 179                | 151                | 155                | 146                | 139                | 26                    | 1,218                  |
| 160—170 „                                         | —                    | 1                  | 61                 | 59                 | 61                 | 51                 | 69                 | 49                 | 55                 | 11                    | 417                    |
| Upwards of 170 lbs.                               | —                    | —                  | 5                  | 22                 | 20                 | 21                 | 35                 | 28                 | 22                 | 10                    | 163                    |
| Totals at each age                                | 1,235                | 242                | 11,212             | 5,429              | 2,870              | 1,952              | 1,499              | 1,077              | 898                | 187                   | 26,601                 |

| Weights of Recruits finally approved for Service. | Proportions per 10,000 at each Age. |                    |                    |                    |                    |                    |                    |                    |                    |                       | Total Proportion of each Weight per 10,000. |
|---------------------------------------------------|-------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|---------------------------------------------|
|                                                   | Boys under 17 Years.                | Between 17 and 18. | Between 18 and 19. | Between 19 and 20. | Between 20 and 21. | Between 21 and 22. | Between 22 and 23. | Between 23 and 24. | Between 24 and 25. | 25 Years and upwards. |                                             |
| Under 100 lbs.                                    | 8,073                               | 83                 | —                  | —                  | —                  | —                  | —                  | 9                  | —                  | —                     | 376                                         |
| 100—110 lbs.                                      | 1,230                               | 868                | 35                 | 39                 | 10                 | —                  | —                  | 19                 | —                  | 53                    | 90                                          |
| 110—120 „                                         | 518                                 | 2,737              | 2,531              | 1,503              | 1,056              | 799                | 630                | 429                | 278                | 642                   | 1,694                                       |
| 120—130 „                                         | 138                                 | 3,595              | 4,284              | 3,627              | 2,906              | 2,561              | 2,023              | 2,034              | 1,659              | 1,604                 | 3,330                                       |
| 130—140 „                                         | 32                                  | 2,025              | 2,296              | 2,916              | 3,330              | 3,371              | 3,402              | 2,999              | 2,572              | 3,162                 | 2,600                                       |
| 140—150 „                                         | —                                   | 578                | 649                | 1,304              | 1,892              | 2,126              | 2,322              | 2,336              | 3,065              | 2,066                 | 1,246                                       |
| 150—160 „                                         | —                                   | 83                 | 146                | 462                | 624                | 774                | 1,034              | 1,356              | 1,545              | 1,390                 | 456                                         |
| 160—170 „                                         | —                                   | 41                 | 54                 | 109                | 212                | 261                | 460                | 455                | 613                | 588                   | 167                                         |
| Upwards of 170 lbs.                               | —                                   | —                  | 5                  | 40                 | 70                 | 108                | 234                | 260                | 245                | 533                   | 61                                          |
| Totals at each age                                | 10,000                              | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000                | 10,000                                      |



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Compared with results in the preceding year an increase of 73 has occurred in the proportion of recruits under 100 lbs. in weight per 10,000 finally approved, one of 15 of recruits between 100 and 110 lbs. in weight, one of 57 between 120 and 130 lbs. in weight, one of 46 between 130 and 140 lbs. in weight, and one of 2 of recruits over 170 lbs. in weight; but, on the other hand, a decrease of 29 is observed in the proportion of recruits between 110 and 120 lbs. in weight per 10,000 finally approved, one of 79 of recruits between 140 and 150 lbs. in weight, one of 55 between 150 and 160 lbs. in weight, and one of 30 in that of recruits between 160 and 170 lbs. in weight.

Omitting boys, the highest proportion of recruits of any weight at any age was, as in the preceding year, between 18 and 19 years of age, and between 120 and 130 lbs. in weight, being 4,284 per 10,000.

In the next table is given the exact measurements of recruits finally approved and the proportion of each measurement per 10,000. It also gives the chest measurement of these recruits arranged in series according to age, together with the proportion per 10,000 of each chest measurement at each age.

TABLE IX.

| Chest Measurement of Recruits finally approved for Service. | Boys under 17 Years. | Between 17 and 18. | Between 18 and 19. | Between 19 and 20. | Between 20 and 21. | Between 21 and 22. | Between 22 and 23. | Between 23 and 24. | Between 24 and 25. | 25 Years and upwards. | Total at each Chest Measurement. |
|-------------------------------------------------------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|----------------------------------|
| Under 31 inches -                                           | 1,073                | 8                  | 4                  | 3                  | —                  | 1                  | —                  | 1                  | —                  | —                     | 1,089                            |
| 31—32 inches -                                              | 110                  | 23                 | 56                 | 8                  | 15                 | 26                 | 3                  | 4                  | 1                  | —                     | 245                              |
| 32—33 " -                                                   | 35                   | 69                 | 961                | 293                | 106                | 47                 | 32                 | 30                 | 40                 | 5                     | 1,619                            |
| 33—34 " -                                                   | 12                   | 96                 | 5,087              | 1,931              | 764                | 452                | 366                | 176                | 134                | 28                    | 8,915                            |
| 34—35 " -                                                   | 5                    | 37                 | 3,896              | 2,145              | 1,102              | 784                | 570                | 389                | 279                | 59                    | 9,266                            |
| Above 35 inches -                                           | 1                    | 11                 | 1,234              | 1,050              | 881                | 642                | 628                | 477                | 444                | 96                    | 5,467                            |
| Totals at each age                                          | 1,236                | 242                | 11,312             | 5,439              | 2,870              | 1,952              | 1,499              | 1,077              | 898                | 187                   | 26,601                           |

| Chest Measurement of Recruits finally approved for Service. | Proportions per 10,000 at each Age. |                    |                    |                    |                    |                    |                    |                    |                    |                       | Total proportion of each Chest Measurement per 10,000. |
|-------------------------------------------------------------|-------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|--------------------------------------------------------|
|                                                             | Boys under 17 Years.                | Between 17 and 18. | Between 18 and 19. | Between 19 and 20. | Between 20 and 21. | Between 21 and 22. | Between 22 and 23. | Between 23 and 24. | Between 24 and 25. | 25 Years and upwards. |                                                        |
| Under 31 inches -                                           | 8,690                               | 330                | 4                  | 5                  | —                  | 5                  | —                  | 9                  | —                  | —                     | 409                                                    |
| 31—32 inches -                                              | 891                                 | 909                | 50                 | 15                 | 52                 | 123                | 30                 | 37                 | 11                 | —                     | 98                                                     |
| 32—33 " -                                                   | 283                                 | 2,851              | 857                | 538                | 376                | 241                | 213                | 279                | 446                | 268                   | 609                                                    |
| 33—34 " -                                                   | 97                                  | 3,926              | 4,510              | 3,587              | 2,903              | 2,316              | 1,775              | 1,634              | 1,492              | 1,497                 | 3,322                                                  |
| 34—35 " -                                                   | 41                                  | 1,839              | 3,475              | 3,951              | 3,840              | 4,016              | 3,903              | 3,612              | 3,107              | 3,155                 | 3,483                                                  |
| Above 35 inches -                                           | 8                                   | 455                | 1,104              | 1,234              | 3,070              | 3,239              | 4,199              | 4,429              | 4,944              | 5,090                 | 2,055                                                  |
| Total                                                       | 10,000                              | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000             | 10,000                | 10,000                                                 |

In comparison with the return for the preceding year an increase of 88 has occurred in the proportion of recruits under 31 inches chest measurement per

10,000 finally approved, an increase of 5 in the proportion between 31 and 32 inches chest measurement, one of 62 between 32 and 33 inches chest measurement, one of 9 between 33 and 34 inches chest measurement, and one of 154 between 34 and 35 inches chest measurement, counterbalanced by a decrease of 318 in the proportion of recruits, of over 35 inches chest measurement per 10,000 finally approved. *United Kingdom.*

Omitting boys, the highest proportion of recruits of any chest measurement at any age per 10,000 finally approved was 5,080 at 25 years and upwards, and above 35 inches chest measurement. This proportion was consequent on a small number of measurements (95), but the proportion dependent on 444 measurements between 24 and 25 years, and above 35 inches was 4,944. In the previous year the highest proportion though of the same measurement was at one year higher, between 24 and 25 years. Taking the ages at which the greater number of recruits are enlisted a high proportion, 4,510, occurred between 18 and 19 years of age and 33 and 34 inches chest measurement.

From the above results it has been calculated that, excluding boys under 17 years of age, the average age of recruits finally approved during the year was 19·3 years, the average height, 5 feet 5·7 inches, the average weight, 125·9 pounds, and the average chest measurement, 33·5 inches. In the previous year the corresponding averages were, age 19·6 years, height 5 feet 5·8 inches, weight 126·2 lbs., and chest measurement 33·8 inches.

The next table shows the state of education of recruits finally approved together with the proportion per 1,000 of those well educated, able to read and write, able to read only, or unable to read.

TABLE X.

|                                | Numbers finally approved. | Proportion per 1,000. |
|--------------------------------|---------------------------|-----------------------|
| Well educated - - - -          | 2,645                     | 100                   |
| Able to read and write - - - - | 21,353                    | 808                   |
| Able to read only - - - -      | 1,022                     | 38                    |
| Unable to read - - - -         | 1,581                     | 59                    |
| Total - - - -                  | 26,601                    | 1,000                 |

Compared with the return for the preceding year an increase of 17 per 1,000 has occurred in the proportion of recruits well educated, and one of 8 in those able to read and write, while a decrease of 6 is observed in recruits able to read only, and one of 19 in those unable to read.

*United  
Kingdom.*

## HOME STATIONS.

### SANITARY CONDITIONS.

#### *Northern District.*

The Principal Medical Officer, Deputy Surgeon-General T. Tarrant, remarks that, from the reports received from the medical officers in charge, the sanitary state of the various barracks and hospitals in the district appears to have been satisfactory, any minor insanitary conditions which arose were promptly attended to, and every care exercised by all concerned to ensure the health of the troops.

At Birmingham the barracks are situated in a densely populated part of the town, but their general sanitary condition is good; some slight improvements were recommended to the kitchen. At Burnley the sanitary conditions of the barracks are good, but it is said that the rooms are rather cold in winter. At Chester the guard room and cells are said to be rather small though well ventilated, and the day room is not sufficiently lighted; the bath rooms are too small and at too great a distance from the barracks. At Fleetwood the sewage is carried off from the barracks and hutments to the sea by main drains, but the end of one of the pipes is at a considerable distance above low-water mark, and requires carrying further down; with this exception the sanitary conditions are satisfactory. It is remarked that the barrack rooms at Halifax were rather cold in winter, and there was some difficulty in ventilating the guard room owing to its being so small. The arrangements for ablution are stated to be insufficient and often out of order. At Lancaster the sanitary conditions generally were in good order, but it is stated that some of the barrack rooms were over-crowded on certain occasions, such as the joining of a number of recruits. At Leeds great improvement was effected in the married quarters, and quarters which were previously occupied by two families were arranged for one family. The drainage of these quarters was discovered to be in an unsatisfactory condition, and steps were at once taken to put them in good order. At Leicester the barracks generally are reported to be in good condition, but the arrangements for warming the rooms are found to be insufficient. The surface drainage in some parts of the barracks underwent improvement, but much more is required, as the water lodges a good deal after rain; this was about to be attended to. At Lichfield the general sanitary condition of the station was well cared for; drainage acts well, ventilation is duly maintained, and over-crowding guarded against. With regard to the married quarters it is said that in some of them the bedroom is without a fire-place, rendering them cold in winter. At Seaforth the sanitary state of the barracks was good, but the situation is said to be rather exposed to prevalent east winds. Certain insanitary conditions in the vicinity of barracks were brought to notice, and representation made to the local authorities. At Preston the barracks and hospital were generally in a good sanitary condition; the water supply is good in quality and sufficient in quantity, but the supply to barracks is intermittent. The ventilation of the barracks is fairly well arranged and effective. There were some complaints as to the lighting of the barrack rooms, but representations were made on the subject. The ablution rooms were well kept, but said to be draughty and uncomfortable. At Warrington the drainage was defective in the early part of the year, but remedial measures were adopted, after which it was satisfactory. At Weedon the barracks are built of brick, and, with the exception of the infantry blocks, are said to be indifferent and old. In the barracks occupied by the infantry ventilation was fairly satisfactory, but in those occupied by the artillery the doors and windows are badly placed for natural ventilation. The water supply was not entirely satisfactory, but other arrangements are under consideration. Some improvements in drainage were effected during the year.

At Wrexham the warming of the wards of the hospital was unsatisfactory, and measures for improvement in this direction were brought to notice. At York the general sanitary conditions both of barracks and hospital were satisfactory, but in the hospital the ventilation of certain wards was not quite what should be desired, and the heating arrangements for some of the large wards were not sufficient. A new infectious hospital was in course of erection during the year, and it was expected would be completed before long. Some improvements in the ventilation of the drains were effected with good result.

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#### *Eastern District.*

The Principal Medical Officer, Deputy Surgeon-General H. F. Paterson, M.D., reports that the general health of the troops in the district during the year was good, and the accommodation and sanitary condition of the barracks and hospitals were satisfactory on the whole. There was no outbreak of epidemic disease among the men except a few mild cases of rose rash at Colchester, and among the children a slight outbreak of measles.

The Principal Medical Officer remarks that it cannot justly be stated that any insanitary conditions in the barracks or hospitals in the district acted prejudicially on the health of the troops. Those discovered to be existent were as far as possible removed, and various improvements and alterations in construction were effected, while others were in progress at the close of the year or noted for action when circumstances would admit.

The following is a concise statement of the chief improvements effected throughout the year and of some which were proposed to be carried out :—

At Colchester a sergeant's mess was enlarged, and a large bathing pond was provided for the use of the troops. A brick ward for the treatment of the more serious cases of sickness was in course of erection at the station hospital, improvements were effected in connexion with the drainage of the female hospital, and a proposition was put forward to construct another ward for the accommodation of 10 additional patients.

At Norwich the stone floor of the guard room in the cavalry barracks was replaced by wood, and it was proposed to provide a new floor to the ablution room in C block, and to lay on water to the married soldiers' quarters in B and C blocks.

At Ipswich sculleries were added to the married soldiers' quarters in the militia barracks.

At Landguard Fort the main drain was extended to the beach, and its further extension was in progress.

At Warley the drains were improved, and it was proposed to increase the accommodation in certain officers' quarters, also to substitute asphalte roofs to guard rooms and garrison cells for the existing ones of concrete.

At Lincoln the drainage of the barracks was discovered to be defective, and steps were taken towards its speedy improvement.

The effects of the training both at Colchester and Warley where regular gymnasia exist exercised a favourable influence on the health of the troops.

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#### *Western District.*

The Principal Medical Officer, Deputy Surgeon-General R. W. Meadows, states that the reports of the medical officers in charge regarding sanitary matters were generally favourable and accorded with his own personal observations. Any defects in sanitation which were observed were, as a rule, promptly remedied. One important point, the disconnexion of all pipes leading from inhabited houses to the main drains, was thoroughly carried out. A material decrease in admissions from preventible diseases was observed, and those which occurred appeared to have been contracted outside barracks.

*United  
Kingdom.*

At Cardiff it is reported that the sanitary conditions were generally good, but it was recommended that the surface drains for carrying off water from down pipes in different parts of the barracks should be supplied with copings, and this was being carried into effect.

The ventilation of the prisoners' room was insufficient, and an extraction shaft was suggested to meet the difficulty. At Exeter the barracks were in a very satisfactory condition; the hospital afforded sufficient accommodation, except during the militia training, when it was occasionally found necessary to use a barrack room in addition. The situation of the hospital for infectious disease is said to be indifferent, being too close to other buildings.

At Pembroke Dock the wooden huts were gradually being replaced by brick structures, which are a great improvement, and not so cold and draughty; they are lighted by gas and warmed by stoves. The drainage is generally good, but some of the surface drains required relaying. The garrison cells were found to be small, dark, and ill-ventilated, and the erection of new ones was suggested. Ablution rooms were satisfactory, but it was recommended that facilities for obtaining warm water for baths should be provided. The accommodation in married quarters was insufficient, and additional ones are required.

At Devonport the barracks generally are reported to be in a good sanitary condition, but it is remarked that in some of them the ablution arrangements need improvement, the baths and basins being old; also that there is no provision for hot water for baths. At Forts Tregantle and Crownhill some overcrowding existed for a time, but was remedied on representation.

At Fort Maker the cells were found to be very damp so that they could not be used in the winter months. At Trowbridge the sanitary condition of the barracks was satisfactory; also that of the station hospital, except that the accommodation is thought to be too limited.

The clothing of the men was generally suitable for the time of the year. In some instances it was necessary to point out that some men were not sufficiently warmly clad; and recommendations were made that men should provide themselves with jerseys, which they could at half cost under regimental arrangements.

It is reported that the rations of the men were good, and that the addition of some soup to the dinner meal had become fairly general; it appears, however, difficult to get men to return to barracks for supper. It is said that Deane's cooking apparatus has been very satisfactory.

The gymnastic training of recruits was regularly carried out at Devonport and Pembroke Dock, with satisfactory results.

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#### *Southern District.*

The Principal Medical Officer, Surgeon-General W. Sim Murray, reports that the health of the troops serving in the district during the year was exceptionally good, and compares satisfactorily with that in the previous year.

The limited accommodation in the station hospital, Portsmouth, alluded to in the report of the preceding year, was supplemented by transferring surplus sick to Gosport, Hilsea, or Netley.

Additional barrack accommodation for men of the Medical Staff Corps was also effected in the hospital building at Portsmouth by the reappropriation of a room lately used as a ward, and formerly as a sergeants' mess.

The commanding officers' quarters at the Clarence barracks were condemned as the site was found to have become unhealthy, owing to the saturation of the sub-soil from defective drainage which has existed for a considerable time, and to the probable presence of old cesspits under the building.

Some overcrowding took place in the married quarters of the Cambridge barracks and of the Clarence barracks, Portsmouth, but arrangements were made by which this could be remedied.

The insanitary condition of the moat near the new barracks, Gosport, which was reported on in the preceding year was considerably improved during the year under report. *United Kingdom.*

At Fort Monckton a drain, which was found to be defective, was greatly improved by raising the soil some three feet, and by fitting the drain with a valve.

At Marchwood there was some overcrowding, an additional hut was therefore occupied with very satisfactory results.

At Bembridge Fort, Isle of Wight, the drains near the master gunner's quarters were reconstructed. At Golden Hill Fort there was a cesspit latrine at the infectious hospital; this was abolished and converted into a dry-earth closet with very good effect.

At Devizes a well used by some of the married families was suspected, the water was therefore analysed with the result that it was found to be more or less contaminated with organic matter; orders were therefore given to discontinue the use of water from the well in question, and the families were directed to obtain water from another well in the neighbourhood.

At Hilsea some slight defects in drainage were discovered; these were at once brought to notice and remedial measures were adopted. The Tipnor Chemical Works about a mile from barracks give off objectionable gases, which in certain directions of the wind reach the barracks and hospital, they do not, however, appear to have exercised any unfavourable influence on the health of the troops. The sub-soil drainage at Hilsea is somewhat imperfect, and cannot be remedied owing to the low level of the surrounding country, only a few feet above high-water mark.

The rations for the troops were generally good, but there were several unfavourable reports with regard to the bread supplied at Portsmouth; in several instances it was found to be badly baked, and the flour to be of inferior quality; action was at once taken to remedy these defects.

At the stations where gymnasia exist the effect of the training on the health of the men exercised was found to be very satisfactory.

#### *Netley.*

The Acting Principal Medical Officer, Brigade Surgeon C. H. Y. Godwin, reports that the sanitary condition of the hospital and out-buildings was good throughout the year, and any representations which became necessary were at once attended to.

The hospital is supplied with water by means of a large reservoir, and three artesian wells. All the wells are connected by one system of water pipes. The reservoir water is reserved for ablutionary purposes. The drinking water comes from the wells.

The kitchens were kept in good order and the cooking was good. The instruction of the men of the Medical Staff Corps in cooking was continued, and was generally satisfactorily and successfully carried out. The rations were on the whole satisfactory.

The latrine arrangements were generally satisfactory. In the medical and surgical divisions the Units combined watercloset, urinal, and slop sink was substituted for the old watercloset and, it is said, worked admirably.

Two boilers in the centre block were renewed. One of these boilers is used for heating purposes and the other for supplying hot water to the baths and nursing sisters' quarters. A new and improved boiler and pumps were also fitted up for supplying salt water to the swimming bath.

At the lunatic hospital the buildings were maintained in good repair during the year. A new pack store was constructed by partitioning off a portion of the workshop. This has been found a great convenience. The dining hall and day-room were painted and recoloured and the ceilings whitened. All the single bedrooms and most of the wards were whitewashed. The stone steps of the north-west staircase being much worn were fitted with patent wooden steps. The officers' quarters were papered and painted.

*United  
Kingdom.*

*Chatham District.*

The Principal Medical Officer, Deputy Surgeon-General J. Jameson, reports that the health of the troops in the district was very good, and compares favourably with that in previous years. The general sanitary condition of all the barracks in the district is said to be fairly good.

Chatham barracks are old buildings and contain many rooms imperfectly lighted, and the condition of the ablution rooms is defective, they are situated in the basement and are dark and damp. It is a defect in original construction, and cannot well be remedied without the erection of new ablution rooms. The bath is placed in a dark corner and screened off, it is not supplied with hot water and consequently is seldom or never used in winter. To have a supply of hot water laid on would entail expense, but at a trifling cost water might be heated in a boiler in the cook house and obtained in buckets when required. This suggestion was put forward to the authorities.

Upper Chatham barracks presented appearances indicative of defective drainage in the basement story of the buildings; some cases of sore throat were, in the opinion of medical officers, due to that cause. The whole system of drainage of these barracks and adjacent buildings, including the casualty hospital, was under investigation, and as no plan of the drainage seemed to exist the drains were traced along their course and their actual condition ascertained.

It was observed that an occupied officers' quarters in the Gun Wharf was in an insanitary state from defective drainage. It was said that the pipes from the closet and scullery led into the main sewer, but on investigation it was found that all pipes were conducted into a large cess-pit which in process of time filled and became a dangerous nuisance. The pit was therefore emptied, disinfected, and filled up, and the drains, properly trapped and ventilated, were connected with the main sewer of the town. A latrine in the Gun Wharf became a subject of complaint, and was remedied by provision of a dry earth closet.

Tilbury Fort was considered to be in an insanitary state from ill-planned and badly-constructed drains. Pending extensive alterations the men were accommodated elsewhere.

The rations of the troops were generally good, but at Gravesend the meat was complained of as being tough and lean, and the bread as being under-baked. Measures were taken to remedy this, and under daily supervision and watchfulness marked improvement took place.

At Sheerness enteric fever occurred amongst the population of the town, and in seeking a cause for the disease the wells were examined, and found to be defective and the water contaminated. The troops obtain their water supply from wells of their own, but still this water was also analysed, and was found with the exception of an excess of chlorides due to presence of sea water by percolation to be a good potable water.

The clothing of the troops is good; but it is believed that a higher standard of health would be maintained if men were encouraged to wear woollen under-clothing in the winter months.

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*South-eastern District.*

The Principal Medical Officer, Deputy Surgeon-General S. A. Lithgow, M.D., C.B., D.S.O., reports that the general health of the troops was good during the year, although it fell short of the high standard of the preceding year. The sanitary condition of the several stations was, with the exception of Canterbury, generally satisfactory. Defects in sanitation were from time to time brought to notice and remedied. The drainage system at Canterbury barracks, and in a less degree at the hospital, gave rise to considerable anxiety. Its faults were those of original construction, such as imperfect

ventilation of sewers, drains passing under occupied buildings, insufficient disconnection of pipes from drains by effective traps. Recommendations bearing on their removal were made and have since been carried out. *United Kingdom.*

The following are among the chief sanitary improvements during the year:—

At Shorncliffe improvements in latrines at the Commissariat barracks; alterations to wastes from sinks and urinals in Royal Engineer lines, and additional ventilating pipes to drains in various places throughout the camp. At Hythe sculleries were added to eight staff sergeants' quarters by building annexes. At Brighton soil pipes of officers' quarters were taken outside the building instead of inside as formerly, and ventilation of the same improved. At Eastbourne drains were relaid in the ordnance yard, and at Littlehampton latrines were altered to the dry-earth system. At Dover flushing apparatus of officers' quarters at the citadel improved; at the South Front barracks disconnection between barrack drains and main sewer; removal of drains from under floor of officers' quarters, and new drain laid down outside building with ventilating pipes extending above roof; at the station hospital, Western Heights, the ventilation of main drain improved, disconnection pit built to cut off hospital main drain from main sewer, a chemical deodorizing apparatus fixed on main drain from hospital, and drains relaid and well ventilated in west wing. At the Shaft barracks officers' quarters soil pipes removed from inside to outside of buildings and satisfactorily ventilated, and several other improvements in drainage and ventilation in different places. At Dover Castle improvement in ventilation of closets at the sergeants' mess, provision of bath for married men in ablution room, sinks supplied and water laid on in the officers' quarters in the keep yard, and improvement in the ventilation of the sergeants' mess kitchen. At Maidstone some defective sinks were remedied, the whole of the barrack room floors in the western and southern blocks have been renewed, and ventilation supplied under the ground floors; concrete was laid over the subsoil, the mud and refuse which had been washed through the old floors having been previously removed. The orderly room and office were similarly treated and the brick plinth which was in a dangerous state, renewed. At Canterbury a new bath-room with three baths built in the east wing, and also one in the west wing of the cavalry barracks, and hot water laid on to baths in married quarters' bath house. A drain under officers' mess removed and relaid outside. In the infantry barracks improvements in ventilation of closets in officers' quarters and sinks made to discharge in the open air. Similar improvements were also effected in the Northgate barracks, artillery barracks, and reserve stores.

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#### *Home District.*

The Principal Medical Officer, Deputy Surgeon-General G. M. Slaughter, reports that the health of the troops during the year was on the whole satisfactory, attributable, in his opinion, to the close sanitary supervision both of men and barracks by the medical officers individually responsible. In no instance could any case of illness be shown to be due to sanitary defects in barracks or hospitals. Any such defects observed were at once brought to the notice of the authorities, and steps taken as far as practicable to remedy them.

The Principal Medical Officer drew special attention to the following points as calculated to improve the health of the troops:—

At Caterham some improvement in ventilation is required in the cells and prisoners' room. The accommodation at the station hospital is sufficient for the present strength of troops, but if the barracks were fully occupied it would hardly be so.

At Rochester Row hospital certain defects in drainage were satisfactorily remedied. The accommodation in the hospital, as has been frequently represented, is quite insufficient for the London garrison. At Kensington barracks



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the stable drains which have been out of order for some time were repaired. The cavalry guard room is too small, and the lock up-room attached to it is dark and ill-ventilated. At Wellington barracks the married quarters, known as Wellington House, situated outside the barracks, and the married quarters inside the barrack enclosure, are not well suited to the purpose to which they are applied. At the Tower of London an old sewer was removed and the drainage completed on a satisfactory plan. The Regent's Park barracks are old and hardly suitable to modern requirements.

At Kingston-on-Thames some of Doulton's yard gullies were laid down with very satisfactory results considering the small outlay incurred, and the defective drainage of married quarters, noticed in last year's report, was rectified.

At Hounslow the infantry lock-up room is too small and its ventilation insufficient.

At Windsor the roads in the cavalry barracks are bad, being soft and becoming muddy and wet on the least rainfall. The guard room is too small for requirements.

At Reading the warming of the wards in the hospital is not satisfactory, so that it is difficult to maintain the requisite temperature.

At Kneller Hall the opening from the main sewer is too close to the building and requires attention.

There was no change in the quantity or quality of the rations issued to the troops during the year, but a considerable amount of attention was directed towards improved methods of cooking, the avoidance of waste of any portion of the rations, and also towards effecting variety in the diets as issued to the men.

The clothing of the men is of good quality and very favourable reports were received of the new pattern great coat which was issued in the winter to some of the regiments in the district.

At all stations where gymnasia exist the medical officers speak favourably of the effects of the training on the health of the men under their supervision.

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#### *Woolwich District.*

The Principal Medical Officer, Deputy Surgeon-General John Warren, reports that the sanitary condition of the barracks, many of which are old and of faulty construction, was as satisfactory as could be expected under such circumstances.

No material alteration was made in the construction of the occupied buildings or their accessories. The barrack rooms were kept clean and in good sanitary condition, and ventilation, lighting, and warming were on the whole sufficient. The facilities for ablution were sufficient. The water supply is good, the only complaint was that the water for flushing purposes pumped from the Thames in the summer weather was said to be sometimes offensive. The drainage, though good, would admit of considerable improvement, and it is stated that the whole system is about to be extensively re-arranged. Surface conservancy in and about the various barracks was carefully attended to, and as a rule all latrines and urinals were kept in a very satisfactory condition.

It is desirable that more quarters should be provided for married soldiers, as many families have at present to reside in unhealthy lodgings in the town, and many of the quarters at present occupied are very old and unsuitable.

Accommodation is sufficient at the Herbert Hospital, but it is stated that a separate building for infectious cases is much needed, a pavilion containing a large number of beds is at present appropriated for this purpose. The accommodation is doubtless ample in time of peace, but in the event of war or other great emergency the whole of the hospital would be required for ordinary sick and wounded. All cases of infectious diseases in the garrison among officers, cadets, women, and children are sent to the Herbert Hospital for

treatment. Quarters were provided at the hospital for eight married soldiers, *United Kingdom.* but this number is hardly sufficient for the requirements of the detachment, and a washhouse for laundry purposes is required by the families residing in the hospital.

The Principal Medical Officer brings the following recommendations to notice: that the meat rations should be increased, and that the cooking should be more varied. He thinks also that cardigan jackets should be supplied to the men for winter wear.

The following sanitary improvements were effected during the year:—Increased cubic space was given to several upper story rooms in the artillery barracks by removing the ceilings and in some cases taking down partitions between rooms. At the Royal Artillery barracks, east wing, the insanitary condition of the floors of urinals was remedied, and certain sewers were repaired. At the Army Service Corps barracks alterations were made in the waterclosets of E house, and drains relaid in basement. The War Department drain was connected with the new sewer in Brookhill Road and new drain laid where required. At the Grand Depot barracks officers' quarters were repaired and drains relaid. At the sergeants' mess and staff sergeants' quarters drains were altered and repaired. At the Royal Engineer barracks also sewers were repaired as well as in other quarters. In the Hut Camp certain alterations in water supply were effected.

The Principal Medical Officer suggested that increased bath room accommodation should be provided in barracks.

#### *Aldershot Division.*

The Principal Medical Officer, Surgeon-General Johnston Ferguson, reports that the health of the troops may be said to have been satisfactory throughout the year.

He states that representations were made during the year with regard to the clothing of the men, a great number of whom were found to be wearing only thin cotton shirts or other underclothing altogether unsuitable for winter wear, and an order was in consequence issued making the use of the regulation grey flannel shirt compulsory. The system of assisting men from the canteen or other regimental funds to obtain cardigan jackets or jerseys at a reduced rate is becoming much more extended, and in the cavalry, artillery, engineers, and departmental corps, it may be said that these articles are in general use. Much attention was paid to the soldiers messing and many improvements have resulted, one of the greatest being the issue of bread in 2 lb. instead of 4 lb. loaves, as the latter were frequently insufficiently baked in the centre, the bread then became sour, and great waste ensued in consequence. The present issue is said to work satisfactorily.

Experiments were made by the medical officers in charge of troops and hospitals at this station with regard to the cooking of the meat ration, with a view to determine the average quantity each man receives; the experiments had not been entirely completed but they appear to lead to the belief that the meat ration should be increased.

With regard to the water supply it is stated that the huts in the south camp and the south cavalry permanent barracks are supplied from the Bourley reservoirs. The water is good but sometimes rather dark in colour, due to the peaty soil. The quantity is not at all times sufficient for flushing purposes. The remainder of the permanent barracks receives supply from the town waterworks, good and abundant. In the north camp water is supplied partly from the Bourley reservoir and partly from wells, but the water from some of the latter is not fit for drinking purposes.

It has still been necessary to transfer sick from the Cambridge and second station hospitals to the north camp hospital to avoid overcrowding.

The following sanitary and other improvements were effected in the camp during the year:—The reconstruction of the north camp was continued and the following additions made: six new huts for men, a drill shed, a band

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room, a guard room, quarter-master's store and tailor's shop, a bath room; latrines and urinals, one block of quarters for officers, and two blocks of quarters for married families.

In the south camp extra bath and ablution rooms have been provided, also a woman's washhouse, and 12 warrant officers' quarters were provided with sinks and waterclosets. The sub-ventilation of the huts has been improved by the removal of accumulation of earth.

The drainage throughout the permanent barracks was tested and the drains improved. A number of old-fashioned waterclosets were replaced by others of an improved type. Representations were made as to the necessity of providing a drying room for each separate regiment or corps, so as to obviate the present objectionable system of drying clothes in the married quarters.

Strong recommendations were continued both by medical and military authorities as to the advisability of providing hot water for the baths in camps and barracks.

The gymnasias afforded excellent training and recreation which tended to maintain a high standard of health. The new system of physical drill became general throughout the division, and it is said that excellent results are likely to accrue from it.

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#### *Channel Islands.*

The Senior Medical Officer, Brigade-Surgeon R. W. Berkeley, reports that the health of the troops during the year was very good, and there was little or no serious disease.

The sanitary arrangements in the different barracks and hospitals, as well as the condition of the vicinity of quarters, &c. were generally satisfactory. There was sufficient accommodation, and ventilation was good. Arrangements for ablution, washing, &c., were attended to, and warming and lighting were generally satisfactory.

At Jersey latrine accommodation for single men at Fort Regent, which in the previous year was reported as defective, was extended with marked benefit; and new waterclosets were erected for women. A latrine in the south outwork, which was reported last year, was converted to the dry-earth system, and now works satisfactorily. A latrine attached to the guard-room at Government House was also converted to the dry-earth system. The barracks at Bon Nuit used for some years as a civil infectious hospital were thoroughly disinfected, painted throughout and repaired, and are not in future to be used except for military requirements. At Rozel barracks iron pipes were laid to high-water mark, to carry off all the refuse water from the barracks. The barrack main drain at St. Peter's was generally satisfactory as regards its outfall, referred to in last year's report, and if it is regularly kept clean and free from weeds it is thought that no further extension is necessary. At Guernsey it is said that the accommodation in barracks in the citadel is of an inferior description, and that the latrines are too far from the men's barracks. The accommodation in the married quarters is also deficient, as it only admits of one room to a family. At Alderney the drains have been opened out and ventilated. An engine has been placed in the Arsenal for the purpose of pumping up water to Fort Albert; it is stated to be a great improvement. At the hospital at St. Peter's, Jersey, pipes in connexion with kitchen boiler for the supply of hot water to bath-room have been supplied. A ward for infectious diseases is necessary. At Fort Regent hospital the surgery requires enlargement.

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Kingdom.**North British District.*

The Principal Medical Officer, Deputy Surgeon-General C. Graves Irwin, reports that the health of the troops was good during the year, the sanitary conditions of quarters generally satisfactory, and no disease was traced to defective sanitation.

At Aberdeen the barracks are old but were kept in a very satisfactory sanitary condition, and there was no overcrowding. At Berwick-upon-Tweed it is said that the barracks rooms are small with old-fashioned windows, but ventilation has been attended to, and the total accommodation is sufficient. At Edinburgh Castle the hospital, which had been closed in the previous year for purposes of building and alterations, was not re-opened and the sick of the troops were distributed amongst Leith Fort, Glencorse, and Piershill hospitals, and the Edinburgh Royal Infirmary. At Leith Fort the sanitary condition of the barracks was generally good, and certain defects in ventilation brought to notice in the previous year have since been rectified; the ventilation of the cook-house was also improved. At Piershill the barracks are well ventilated and lighted, and suited to the requirements of the men. The latrines were in good order and a faulty condition of flushing arrangements which was discovered, was at once attended to. The ground to the rear of the north block of buildings requires filling up to prevent accumulation of rubbish and refuse matter. At Fort George the sanitary condition of the barrack was generally good, but the ventilation of the barrack rooms is said to be hardly sufficient and to require improvement. The water supply is from wells, and in dry seasons the supply is at times not found sufficient for all purposes, but measures have been recommended which, it is believed, will remedy all defects. The lighting of the barrack rooms in winter months was not entirely satisfactory. At Glasgow the barrack rooms are said to be rather cold and draughty in winter, on account of the windows being very numerous. Every alternate window on the most exposed side in the two upper stories of one of the buildings was boarded up as an experiment during the coldest time of the year, with satisfactory result. The cavalry and artillery parade ground was somewhat improved by removing soft mud and filling up with gravel. At Glencorse the barracks are well situated, and the sanitary condition of the buildings and their internal arrangements leaves little to complain of, but the medical officer called attention to insanitary conditions in the vicinity of the barracks. The sanitary arrangements of all other stations in the district were generally reported to be satisfactory.

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*Belfast District.*

The Principal Medical Officer, Deputy Surgeon-General A. M. Tippetts, reports that the health of the troops was good throughout the year, and that a decrease has occurred in the sick rate as compared with the preceding year.

The barracks were somewhat overcrowded as they are occupied according to the old construction. This has been necessary on account of military reasons, but it does not appear to have exercised any deleterious influence on the health of the troops. The ventilation of the barracks is generally good, and it was carefully attended to. The general sanitary conditions of the barracks were also fairly satisfactory.

At Willow Bank, Belfast, huts have been built to accommodate 180 men and accommodation for 180 more is provided for in a mill taken over for this purpose. A shed is used as a schoolroom, and an ablution room has been completed. There are huts for guard rooms, cells, hospital, and offices. A new building containing officers' quarters and mess was completed and taken into use. The surface drainage was improved; the roads and spaces between huts re-metalled and low parts of the ground filled in.

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During the summer months detachments of infantry were under canvas at Holywood for musketry. There was no unhealthiness during the season, and a better system of water supply was carried out.

The hospital at Belfast was unchanged and remained quite unfit for the requirements of a large garrison. It was necessary to use five rooms in barracks as a temporary hospital, and in addition the upper floor of a condemned officer's quarter in the cavalry barracks was temporarily used as an infectious disease ward. Recommendations for enlargement and improvement of the hospital were under consideration, and it was expected that before any great lapse of time some additions would be effected.

At Dundalk the barracks are generally in a satisfactory condition, but it is said that their situation is rather exposed to the east winds during the earlier months of the year. The hospital accommodation is good, and ventilation, lighting, and warming sufficient. The married quarters, in two-storied blocks, do not afford sufficient accommodation, as each married man has but one room.

At Enniskillen the barracks were in good sanitary condition, and also the hospital except that its situation is greatly exposed, and that the infectious ward is damp from the porous and inferior nature of the stone of which it is constructed.

No change was effected during the year in the rations of the troops. The clothing has been found to be suitable, and no recommendations appear to have been necessary. The duties of the men were of the usual character. Gymnastic training was carried out where possible with satisfactory results.

Among sanitary improvements effected were, at Dundalk, laying on town water to barracks, and renewing the floors of the stables; at Omagh, warming of prisoner's room and cells, and provision of waterclosets for infectious ward; at Enniskillen, renewal of waterclosets in officers' quarters, together with several other improvements of a minor character at various places.

*Dublin District.*

The officiating Principal Medical Officer, Brigade Surgeon J. Colahan, M.D., reports that the sanitary condition of the barracks generally was reported to be satisfactory, but, as has been shown in former reports, many of the buildings are old and do not entirely meet the requirements of modern sanitation, and ventilation is defective in the barracks at some small out stations. In some instances overcrowding was reported. This condition was duly brought to notice, and was reduced during the summer by encamping troops and opening new barracks at Ballinrobe and Carlow. In Dublin, the Wellington barracks were occupied by troops, but some overcrowding, especially during the winter months would appear to be occasionally unavoidable, as at times the troops in the district are in excess of the barrack accommodation.

The reports show that the drainage and sanitary condition of the vicinity of some of the barracks are very unsatisfactory, as in Galway, Longford, Loughrea, and in Dublin at Pigeon House Fort, the main city sewer passing in close proximity; the Royal Hospital, Beggars Bush, Richmond, Linen Hall, and Ship Street barracks which are in the midst of crowded and dirty localities, and are situated on an objectionable site close to a river polluted by the sewage from the dwellings along its course.

Drainage within the barracks was generally reported to be satisfactory. Sub-soil drainage was carried out in the Royal barracks, and flush out closets were substituted for Macfarlane's latrine trough. The drainage from Arbor Hill is now discharged by a special sewer, and does not communicate with the drainage system of the Royal barracks. The dry earth system of conservancy has been introduced into many of the barracks.

As has been shown elsewhere, enteric fever was very prevalent among the troops, and chiefly in the Royal barracks. In connexion with this occurrence of enteric fever, the sanitary condition of the barracks, especially the

Royal barracks, received considerable attention during the year, and many of the recommendations of the special sanitary committee held in the previous year were carried out. *United Kingdom.*

A further thorough sanitary inspection of the Royal and other barracks in Dublin was made by a sanitary expert deputed for the purpose by the authorities.

The water supply was generally of good quality and sufficient in quantity; in any suspicious case samples were at once sent for analysis, and when necessary, measures taken to procure supply from another source.

The rations were generally reported to have been good, and minor complaints at one or two out-stations were duly remedied. At Mullingar some very successful arrangements were made by the commanding officer with a view to improve the men's diet, by which, without increase in expenditure, the men were provided with some extra articles of diet for breakfast, and with a hot supper with bread and coffee in the evening. Orders were also issued on the subject of providing refreshment during the night for the men on guard in the district generally.

Among the principal sanitary improvements effected or in progress during the year were the erection of cavalry barracks at Grangegorman. At the Royal barracks demolitions of building which obstructed air; excavating, concreting, and ventilating under some of the ground floor rooms; removal of cast-iron ventilating shafts from main drains which were fixed to walls of buildings and provision of brick ventilating shafts at the heads of the drains, including fresh air intakes; erection of flushing tank, &c. Wellington barracks fitted up for temporary accommodation of troops. At Royal Infirmary improved ventilation to soil pipes and new drain for lavatory block. At Richmond barracks improvements to drainage and provision of ventilating shafts at married quarters. At Athlone improvements in ventilation of drains. At Westport, Loughrea, and Boyle improvements in ventilation of barrack rooms, &c., and at several other stations various sanitary services were effected.

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#### *Cork District.*

The Principal Medical Officer, Deputy Surgeon-General W. Cattell, reports in satisfactory terms of the general health of the troops during the year. The sanitary conditions of the different barracks and hospitals was generally good, and any defect which arose was at once brought to notice.

The occupation throughout the district continued the same as in previous years, with the addition of the re-opening of the station of Roscrea which had been temporarily unoccupied during mid-winter. The improvements in drainage ventilation at Cork at the close of the year were nearly completed; certain old disused drains were filled up and the drainage generally improved. The drain from the area of M house where occupants had complained of smells in the lower quarters was found to be blocked for some distance; this was remedied. The city sewers were in process of ventilation so that pressure upwards would cease.

Financial exigencies prevented extensive alterations, but various improvements were effected at many of the out-stations. Ventilation was improved in some places, and cesspits which existed at Spike, Wexford, Roscrea, and Fethard were all filled up and replaced by a simplified earth system, which proves satisfactory. The conservancy at all stations was generally carried out in a satisfactory manner.

The rations were of good quality, and the cooking was sufficiently varied; and some improvements were made by endeavours to diminish waste, especially of potatoes from negligent peeling. The present coppers are said not to be adapted for soup making, as the fires are too strong and cannot well be regulated; in place of one copper, a small hot plate would be an advantage with a covered stock pot which might conveniently hang from a bar so as to be turned aside when frying is required.

The water supply was generally good in quality, and the ablution accommodation was generally satisfactory, but it is remarked that at very few stations

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foot baths exist, but in the new barracks at Tipperary, strong earthenware ones were fixed under taps with outlet plug pipes as these, however, became broken they were removed as unnecessary and not replaced, since which time the ordinary hand basins have been used by the men for this purpose, which is objectionable.

It has been recommended that on rifle ranges, many of which are three or four miles from camp or quarters, certain shelter huts should be erected; it is believed that such a provision would be productive of satisfactory results.

Another need mentioned by the Principal Medical Officer is a hospital for women and children at the headquarters of the district. In other respects the hospital accommodation was sufficient and satisfactory.

The exercises in the gymnasia which exist at the large stations were beneficial to the physical development and health of the men.

#### *Curragh District.*

The Principal Medical Officer, Brigade Surgeon J. J. Chappell, reports that no disease occurred in the district which could be satisfactorily traced to any insanitary condition of the barracks or huts. On account of the occurrence of cases of enteric fever every effort was made to discover the origin of the disease, but without avail.

The huts are old and in some the floors appear to have needed repair.

The new central building of No. 2 station hospital, consisting of dining room, reading room, kitchen, stewards' stores, &c., was handed over for use in the latter part of the year.

A new well was being sunk at the west end of the camp for additional water supply.

The main sewer was ventilated by means of the provision of intercepting pits and pipe ventilators. All sinks and urinals were, on the recommendation of the Principal Medical Officer, trapped and ventilated; a large open drain north of G square was piped and covered in; a water tank was fixed in K square as a reserve for ablution purposes; the stokers' room at the commissariat bakery was ventilated by five large cowl ventilators; a new filter was supplied to the waterworks, and instructions issued for the charcoal and gravel to be renewed periodically; a foul ditch which used to receive the overflow drainage from the abattoir was put into a sanitary condition and now receives no overflow; all the foul drains were about to be remodelled and piped, and at Newbridge the whole of the sewer ventilators were raised five feet above the eaves.

The cubic space per man in the huts was found to be too little, representations were made which were attended to and the accommodation brought to regulation.

As the camping ground on the south side of the camp had been encroached upon by new buildings an extension of the boundary was applied for, and between 70 and 80 acres were taken in for the purpose.

Among other recommendations which the Principal Medical Officer put forward were as follows:—A second stove to each of the concrete huts in E square, and certain cook houses supplied with Warren's apparatus, require a boiler in addition.

The camp being situated in a most exposed situation on the ridge of the hill facing north should be protected by a broad avenue of evergreen trees.

A large underground tank should be made in each square to collect the rain water from the huts which is now wasted; this would economise the water supply, be a great boon for washing and ablution, and most useful in case of fire.

The work in the gymnasium was carried out most satisfactorily and with great care. The exercises caused marked improvement in physical development and health of recruits and others.

### III.—ON THE HEALTH OF THE TROOPS SERVING IN THE MEDITERRANEAN.

#### *Sickness and Mortality.*

#### I.—GIBRALTAR.

The average strength of the warrant officers, non-commissioned officers, and men serving in the garrison during the year was 4,736. The troops comprised seven batteries Royal Artillery, four companies Royal Engineers, four battalions of infantry, viz., the 1st Battalion South Staffordshire Regiment, the 1st Battalion Royal West Kent, the 3rd Battalion King's Royal Rifles, and the 1st Battalion Norfolk Regiment; also detachments Departmental Corps and Garrison Staff. The only change in the composition of the garrison during the year was the relief of one company Royal Engineers by another.

The principal statistics of sickness and mortality among the troops generally are shown in the subjoined table, and those of particular corps in Abstract XXXIX.

| 1888.<br>Average Strength. | Admissions. | Deaths          |              |        | Invalids   |                     | Average daily Sick. | Ratio per 1,000 of Strength. |         |                     |                              |                  |
|----------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|------------------------------|---------|---------------------|------------------------------|------------------|
|                            |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |                     | Admissions.                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| 4,736                      | 2,777       | 13              | 3            | 16     | 90         | 32                  | 172.75              | 596.3                        | 3.37    | 19.00               | 6.75                         | 36.47            |

The general health of the troops continued to show improvement during the year, and the ratios of sickness and mortality still further declined. The decrease in admission rate as compared with the corresponding rate in the previous year was 87.9 per 1,000, that in death rate 2.92, and that in constantly sick rate 1.62 per 1,000, while compared with average similar ratios for the preceding 10 years the decrease was as much as 248.9 per 1,000 in the ratio of admission, 3.52 in that of mortality, and 13.21 in that of constant inefficiency through sickness. The average sick time to each soldier was 13.35 days, being half a day shorter than in the previous year, and shorter by 4.78 days than the average period in the previous 10 years; the average duration of each case of sickness was 22.77 days, longer by 2.15 days than in the preceding year, and by 1.06 days than the decennial average.

Among individual corps having an average strength of over 100 men, it will be observed in the Abstract above alluded to that the highest admission rate, 820.4 per 1,000, was in the 1st Battalion Norfolk Regiment, the next being 686.5 in the 1st Battalion South Staffordshire Regiment; the lowest admission ratio was 438.6 in the Royal Engineers, the next above being 448.9 in the 3rd Battalion King's Royal Rifle Corps. The highest mortality ratios were 7.63 and 7.52 per 1,000 in No. 3 and No. 2 Batteries, 1st Brigade, Western Division, Royal Artillery respectively; in several batteries there was no mortality, and low ratios, 2.33 and 2.34, occurred in the 1st Battalion Royal West Kent and the 1st Battalion South Staffordshire Regiments. The ratio of constant inefficiency was highest in the Norfolk Regiment, 53.32 per 1,000, and next, 45.07,



*Gibraltar.*

in No. 3 Battery, 1st Brigade Lancashire Division, Royal Artillery, the lowest ratios being 26·64 in the 3rd Battalion King's Royal Rifles, and 26·69 in No. 2 Battery, 1st Brigade, Lancashire Division Royal Artillery.

The ratio of admission into hospital among men under 20 years of age was 664·2 per 1,000, among men between 20 and 25 years of age 681·5, between 25 and 30 years 443·4, and over that age 324·9. Mortality was nil among men under 20 years of age, 2·13 per 1,000 among men between 20 and 25 years, 4·93 among men between 25 and 30, and 2·29 over that age. Compared with results in the preceding year, it is seen that the highest admission rate was in the same quinquennium in both cases, but mortality was highest among men over 30 years of age in the previous year.

The admission ratio among men in their first year's service in the Command was 1077·3 per 1,000, falling in the second year of service to 542·8, in the third year to 429·5, and over that time to 313·7. A similar decline was observed in the preceding year. Mortality in the first year of service in the Command was equal to 4·54 per 1,000, in the next year 2·97, and in the third year 1·48, rising after that time.

The principal statistics of sickness and mortality due to the different groups and orders of diseases are tabulated in Abstract II.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—Two admissions are recorded under the head of *eruptive fevers*, one was a case of modified small-pox, and the other a case of scarlet fever; both did well, and neither disease spread.

*Enteric fever* caused 73 admissions and 5 deaths, being in the ratios of 15·4 and 1·06 per 1,000 respectively. In the previous year the admission rate was only 7·6, but the death rate was 1·95 per 1,000. It was in the year 1886 that enteric fever was greatly prevalent, when the ratio of admission was equal to 36·7 and the death rate to 6·04 per 1,000. Compared with the average of the preceding five years, the admission rate in the year under report shows an increase of 5·2 and the death rate a decrease of ·96 per 1,000. The per-centage of mortality to attack was 6·8, in the previous year it was 25·7, in 1886 it was 16·5, and the average for five years was 19·7. *Other continued fevers* show 131 admissions, equal to a ratio of 27·7 per 1,000, which is above the rate in the preceding year by 5·0, but considerably below the average ratio of these fevers for the preceding five years. With regard to fevers in Gibraltar the Principal Medical Officer, Surgeon-General W. A. Mackinnon, C.B., remarks that he finds that "there is no very decided agreement of opinion among those " who had much to do with them as to whether all or many of them are enteric, " but that they are all due to a specific poison cannot, I think, be maintained. " That they are due to the inception of an atmosphere charged with the exha- " lations of organic matter in a state of fermentation or decomposition appears " to me to be the only solution of the question. I look upon most fevers that " prevail here as simply due to blood poisoning from some such source as I " have indicated. They may, and often do, arise from defects of house drains " or from a soil under and around dwellings which has become impure from " long continued reception of animal excreta and refuse matter of all kinds. " Wet earth and stagnant water store up organic poison to a considerable " extent, and must prove injurious to health. It often happens that families " occupying the same premises and living under the same conditions are very " differently affected by this poison. One may have very severe fever which " may on post-mortem examination show enteric lesions; another a more " ephemeral fever, with perhaps a rash on the skin of some sort or other; a " third may have sore throat and diphtheria; and boils or enlarged glands " may be the fate of others. The condition of the patient's constitution at " the time, and probably the quantity of poison inhaled, or its mephitic " intensity, seem to be the determining factors. My own opinion is that a " proportion of these cases are remittent fevers, most decidedly not typhoid. " They are due to some kind of drain poison or miasma from polluted ground. " Quinine has no influence over them; they last a long time, two or three " months or longer; no organic complication can be discovered in many " of them, nor do sequelæ occur, with the exception of rheumatic and " neuralgic pains accompanied by debility and anæmia. In houses and " barracks in which drains are in proper condition, and their connexion with " main sewers formed on sound principles, these diseases do not occur."

In the next two sub-groups, *malarial fevers* and *septic diseases*, there were *Gibraltar*. no admissions, but in the following, that of venereal disease, there was as usual a great deal of sickness, though not so much as in the previous year. The admissions for *primary syphilis* were 91 in number, equal to a ratio of 19·2 per 1,000, as compared with 18·4 in the preceding year. If the sickness from simple venereal ulcer be added the ratio for primary venereal sores would be 84·6 per 1,000, as compared with 138·4 in the previous year, a considerable decrease, and still greater when compared with the average rate for the preceding five years, 156·1 per 1,000. The admissions for *secondary syphilis* numbered 168, or 35·5 per 1,000, lower than in the preceding year by 3·9, but above the quinquennial average ratio by 6·5. The admissions for *gonorrhœa* were 433, equal to a ratio of 91·4 per 1,000, a decline of 18·1 from the ratio in the preceding year, and one of 43·9 from the average ratio of the preceding five years. The total admission rate for all forms of venereal disease was 211·5 per 1,000, lower than in the previous year by 75·8, and below the average rate of the preceding five years by 103·9. The total ratio of constant inefficiency on account of these diseases was 16·02 per 1,000, that in the previous year being 19·83, and the quinquennial average rate 21·18 per 1,000.

The admissions for *alcoholism* numbered 20, equal to a ratio of 4·2 per 1,000, which is only half that of the previous year. The admission rate for *debility*, 1·9 per 1,000, is also below the rate in the preceding year as well as below the average rate.

The ratio of admission for *rheumatism* was 39·7 per 1,000, which is higher than in the preceding year by 15·6, but is just about the average rate. Out of the total number of cases 5 were rheumatic fever, but all did well. Many of the cases of rheumatism supervened on fevers and were very tedious. *Tubercular diseases* show 11 admissions, 8 being for tubercle of the lungs. The admission ratio, 2·3 per 1,000, is below the average and also below the previous year's rate. There were two deaths from tubercular disease of the lungs, one of which occurred in an invalid after having left the Command.

The remaining admissions for general diseases comprised two cases of non-malignant growth, two of anæmia, one of purpura, and one of cancer, which proved fatal.

**LOCAL DISEASES.**—*Diseases of the Nervous System* caused 18 admissions, of which 4 were cases of mental disease; the admission ratio, 3·8 per 1,000, is below the average, though higher than the last year's rate by 2·3. Among the cases were 7 of neuralgia, and 4 of epilepsy. There were two fatal cases, one of inflammation of the cerebral membranes, and one of tetanus. The last-named case occurred in a man who had sustained a severe wound of the left axilla.

*Diseases of the Eye* were the cause of 39 admissions, nearly all cases of conjunctivitis. The admission ratio, 8·2 per 1,000, is lower than in the previous year and below the average. The same is the case with the admission ratio for affections of other organs of special sense, 5·5 per 1,000. All the admissions were for aural diseases, principally inflammation of the external meatus.

*Diseases of the Circulatory System.*—Only 7 admissions are returned, of these 5 were cases of valve disease of the heart, one of which proved fatal. There was also one death in an invalid after leaving the Command from valve disease of the heart.

*Diseases of the Respiratory System* caused 101 admissions, equal to a ratio of 21·3 per 1,000, which is lower than the corresponding rate in the previous year by 8·0, and is also below the quinquennial average rate. Five sixths of the admissions were due to bronchial affections, and the remainder comprised 8 of pneumonia, one of which was fatal, 6 of pleurisy, and 2 of pneumonic phthisis.

*Diseases of the Digestive System.*—362 admissions are returned under this head, the ratio being equal to 76·4 per 1,000, which is slightly below the corresponding ratio in the previous year, but much lower than the average rate. The principal causes of admission were affections of the mouth and throat 131 cases, dyspepsia 112, diarrhœa 53, colic 36, and jaundice 14.

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*Diseases of the Lymphatic and Glandular System*, which had shown a decrease in prevalence in the previous year, still further declined in the year under report, the admission rate being only 3·4 per 1,000.

*Diseases of the Urinary System* caused only 8 admissions, of which 4 were for incontinence of urine, 3 for Bright's disease, and 1 for nephritis.

*Diseases of the Generative System.*—336 admissions are returned under this head, the ratio of admission was, therefore, 70·9 per 1,000, which is considerably lower than the corresponding rate in the previous year and the average rate of the preceding two years; 310 of the admissions, or 65·4 per 1,000, were for ulcer of the penis, and of the remaining cases orchitis was the chief cause of admission.

*Diseases of the Organs of Locomotion* caused 5 admissions only; in the previous year also the cases were but few. *Diseases of the Connective Tissue* showed 63 admissions, chiefly cases of abscess. The ratio, 13·3 per 1,000, is below the average rate and the rate in the preceding year.

*Diseases of the Skin* gave an admission ratio of 27·9 per 1,000, below the rate in the previous year by 12·2, and also below the average. The prevailing affections were, as usual, eczema, itch, boils, and whitlows.

*Injuries.*—The number of admissions for injury is returned as 521, equal to 110·0 per 1,000, being slightly above the average rate as well as that of the previous year. Over four fifths of the cases were due either to contusions, wounds, or sprains. Among the remainder may be mentioned 2 cases of concussion of the brain, both resulting from falls; both eventually recovered, but in once case operative interference was necessary, and a small piece of rock embedded in the outer table of the skull necessitated removal. There were 22 admissions for fracture and 2 for dislocation. One case of gunshot wound, suicidal, occurred, the man being in a state of great mental depression due to ill-health. There was also one death from accidental drowning while bathing.

*Invaliding.*—The number of men invalided during the year was 90, being in the ratio of 19·00 per 1,000, which is lower than the rate in the previous year by 2·24, and than the average rate for the preceding 10 years by 14·44. The highest invaliding rate in any corps was 43·16 per 1,000 in No. 3 Battery, 1st Brigade, Eastern Division, and the lowest 7·52 in No. 3 Battery, 1st Brigade, Western Division, Royal Artillery. Among the infantry regiments the highest rate was 27·97 per 1,000 in the Royal West Kent Regiment, and the lowest 10·57 in the King's Royal Rifles. Invaliding according to age showed a rate of 14·93 per 1,000 among men under 20 years of age, one of 19·91 among men between 20 and 25 years, one of 18·88 between 25 and 30 years, and lower still after that age; in the previous year the highest rate was among men between 25 and 30 years of age. With regard to service the highest invaliding rate was 34·09 per 1,000 among men in their first year in the Command, 18·43 among men in their second year, and 12·37 among men in their third year, rising after that time; but in the previous year men in their second year of service in the Command gave the highest rate. Among the causes of invaliding were enteric fever 28 cases, equal to 5·91 per 1,000, other continued fevers 20 cases, or 4·22 per 1,000, tubercular diseases 10 cases, or 2·11 per 1,000, secondary syphilis 7 cases, or 1·48 per 1,000, and diseases of the nervous system, including 3 cases mental disease, 6 cases, or 1·26 per 1,000. An increase is noticed in the invaliding for fevers as compared with the previous year.

The number of men finally discharged as medically unfit for further service was 32, being in the ratio of 6·75 per 1,000, this is fractionally below the rate in the previous year, but is lower by 6·37 than the decennial average rate. The principal disabilities necessitating discharge were nervous affections 6 cases, including 2 cases of mental disease, diseases of circulatory system 4 cases, debility 4 cases, ophthalmic affections 3 cases, diseases of the respiratory system 3, injuries 2, and single cases of other diseases.

*Officers.*—The average strength was 165, and there were 65 attacks of illness, 2 deaths, and 9 officers were invalided. The ratio of prevalence of sickness was 393·9 per 1,000 as compared with 411·0 in the previous year, the death rate was 12·12 as compared with nil, and the invaliding rate 54·54 per 1,000 as compared with 55·22. Among cases treated were 9 of fever, of

which 3 were enteric fever, two of these proved fatal, and the third was invalided to England. Rheumatism was the cause of 7 attacks of illness, and various affections of the digestive organs 11 attacks. The causes of invaliding were fevers 5 cases, debility 2, and rheumatism and jaundice one case respectively. *Gibraltar.*

*Women.*—The average strength of women was 288, and there were 171 admissions into hospital and 2 deaths. The ratio of admission was 593·7 per 1,000, an increase of 113·4 on the corresponding rate in the previous year; but the death rate was 6·94 per 1,000, a decline of 4·87. Among the admissions were 25 of fever, including 2 of enteric fever, 17 of debility, 14 of rheumatism, 13 of bronchitis, and 22 of uterine affections. The deaths were due to asthma and uterine hæmorrhage respectively.

*Children.*—The average strength was 519, the admissions into hospital 332, and the deaths 18. The ratio of admission was 639·7 and that of mortality 34·68 per 1,000 as compared with 575·7 and 38·99 respectively in the preceding year. The most prevalent affections were simple fevers 51 cases, whooping cough 18, debility 16, bronchitis 49, affections of the mouth 36, diarrhoea 58, &c. The deaths were caused by diarrhoea in 5 cases, enteritis 4, bronchitis, convulsions, debility, and diphtheria 2 cases respectively, and one death is returned from immaturity at birth.

*Sanitary Conditions.*—The Principal Medical Officer reports regarding the drainage of the place that a considerable improvement in the entire system is being brought about by the Sanitary Commissioners. Several of the principal sewer outfalls are to be changed into storm-water outlets, and new sewer outfalls will be placed in situations less injurious to the health of the garrison and community generally. It is intended to carry the sewage further out to sea, and into places where greater advantage of outgoing currents may be obtained. The separate system is proposed to be adopted throughout the city and garrison. Surgeon-General Mackinnon goes on to remark that until all the quarters and barracks are put into a proper sanitary condition, and kept so, impaired efficiency of the troops will continue.

In the North Front the subsoil was reported to be in a bad state, and strong recommendation was made that it should be drained in order to lower the level of the subsoil water, and that the space beneath the huts should be concreted. At the Grand Casemates it was found that two openings, intended for cleaning, into two syphons which disconnected the latrine drain from the main drain, had been left open in error. These openings were nearly on a level with the floors, and close to the men's barracks. A drain from the latrine became defective, and allowed sewage to soak into the soil close to the men's rooms. A good many cases of fever occurred in these barracks which, it was thought, was due in great measure to the above-mentioned defects. At Wellington Front, also, a good many cases of fever occurred; the drains were, therefore, carefully examined and found to be defective, and were consequently put into order and certain structural alterations effected which will be of benefit to health.

The water supply for ablutionary purposes is obtained from the North Front, and that for drinking purposes is rain water collected and stored in tanks. It is reported to have been sufficient in quantity and generally of good quality. Frequent analyses were made to ascertain its purity.

The rations are said to have been good and sufficient in quantity. No changes were made during the year. The means of cooking were satisfactory.

With regard to the clothing of the men the Principal Medical Officer reports that it was of good quality and suitable to the climate, except that for the winter months the frock and trousers now in use are too thin and porous. The men should have a warm woollen jumper with sleeves to wear under the present frock, or else a frock of thicker material and trousers of the same. In fact winter clothing should be the same as in England.

The Principal Medical Officer also records his opinion that the allowance of coal in winter for six weeks is not sufficient, and that the period should be extended to nine weeks. The dampness and humidity are very considerable, and the changes of temperature very rapid, resulting in frequent rheumatic and feverish cases among the men which might be obviated by timely use of

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additional fires in barrack rooms, particularly during the prevalence of "Levanter" winds, which are always accompanied by sharp cold and much moisture.

A considerable number of sanitary improvements were effected in the different barracks during the year, principally as regards improvements in drainage both by structural alterations and ventilation of existing drains. Improvements in latrine arrangements were also attended to. Wooden floors were substituted for stone floors in certain barrack rooms at Europa, and gratings were provided in five rooms in the North Front hutments. Large fresh-water tanks were provided at Europa huts, the South barracks, and the North Front.

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## II.—MALTA.

The average strength of the troops serving in Malta during the year was (with the exception of the Royal Malta Fencible Artillery) 6,353, and the force was composed as follows:—The headquarters and eight batteries Royal Artillery, two companies Royal Engineers, 1st Battalion Royal Highlanders, 1st Battalion Duke of Cornwall's Light Infantry, 2nd Battalion Essex Regiment, 1st Battalion Dorset Regiment, 1st Battalion Royal Berkshire Regiment, 2nd Battalion Border Regiment, 1st Battalion Shropshire Light Infantry, 1st Battalion Gordon Highlanders, detachments Departmental Corps and Garrison Staff. The arrivals during the year were three batteries Royal Artillery from England, No. 3, 1st Brigade North Irish Division, No. 4, 1st Brigade, Scottish Division, and No. 4, 1st Brigade Southern Division, the 1st Battalion Dorset Regiment, and the 2nd Battalion Border Regiment from England, and the headquarters and half the 1st Battalion Royal Berkshire Regiment from Cyprus. The departures were Nos. 7, 8, 9 batteries, 1st Brigade South Irish Division for England, the 1st Battalion Duke of Cornwall's Light Infantry for India, and the 1st Battalion Gordon Highlanders for Ceylon.

The following table shows the principal statistics of sickness and mortality among the troops in garrison during the year:—

| 1898.<br>Average Strength. | Admissions. | Deaths             |              |        | Invalids   |                        | Average<br>daily<br>Sick. | Ratio per 1,000 of Strength. |         |                        |                                    |                                |
|----------------------------|-------------|--------------------|--------------|--------|------------|------------------------|---------------------------|------------------------------|---------|------------------------|------------------------------------|--------------------------------|
|                            |             | In the<br>Command. | Of Invalids. | Total. | Sent Home. | Finally<br>Discharged. |                           | Admissions.                  | Deaths. | Invalids<br>sent Home. | Invalids<br>finally<br>Discharged. | Average<br>Constantly<br>Sick. |
|                            |             |                    |              |        |            |                        |                           |                              |         |                        |                                    |                                |
| 6,353                      | 3,477       | 38                 | 2            | 40     | 77         | 56                     | 211·18                    | 547·3                        | 6·29    | 12·12                  | 8·81                               | 33·24                          |

Comparing the results of sickness and mortality with those of the preceding year, it is observed that the ratios of admission are almost identical, that the ratio of constantly sick is lower by 2·70 and the ratio of mortality by ·25 per 1,000. Compared with average similar ratios for the previous 10 years, a decrease of 263·7 per 1,000 is observed in the admission ratio, one of 3·46 in the rate of mortality, and one of 16·77 in that of constant inefficiency through sickness.

The average sick time to each soldier was 12·16 days, which is shorter than in the previous year by about a day, and than the average period in the preceding 10 years by six days. The average duration of each case of sickness was 22·23 days; this is less by a day and three-quarters than in the preceding year, and by a quarter of a day than the average decennial period.

The sickness and mortality, &c. in individual corps is shown in a table given in Abstract XXXIX.

Excluding detachments and corps only a short time in garrison, the highest admission rate was 1365 per 1,000 in the 4th Battery, 1st Brigade, Scottish Division, Royal Artillery, quartered at St. Elmo, the next being 1200 in the 3rd Battery, 1st Brigade, North Irish Division, also at St. Elmo; the lowest admission ratio was 382·9 per 1,000 in No. 1 Battery, 1st Brigade, Southern Division, stationed at Fort San Rocco and Ricasoli, the next being 396·5 in the 1st Battalion Shropshire Light Infantry at Verdala Barracks. The mortality rate was highest in the Royal Engineers, 21·74 per 1,000, dependent on three deaths; the next rate was 21·12 in the 1st Battery, 1st Brigade, North Irish Division, Royal Artillery, at Fort Tigne; in several batteries of artillery there was no mortality, and there were low ratios in the following infantry regiments, the 1st Battalion Gordon Highlanders, Pembroke Camp, 2·75 per 1,000, the 2nd Battalion Essex Regiment, headquarters at Floriana, 3·23, and the 1st Battalion Dorset Regiment at Isola, San Francesco, and Polverista, 5·51. The highest ratio of constantly sick was 67·85 per 1,000 in the 4th Battery, 1st Brigade, Scottish Division, followed by 56·85 in the 2nd Battery, 1st Brigade, Northern Division, Royal Artillery, at Forts St. Angelo and Delimara, &c.; the lowest ratio was 22·28 per 1,000 in the 1st Battalion Gordon Highlanders, then 23·47 in the 1st Battery, 1st Brigade, Southern Division, Royal Artillery, the next above being 26·99 in the 2nd Battalion Essex Regiment.

It is observed that the highest admission rate according to age was 678·0 per 1,000 among men between 20 and 25 years of age, this was also the case in the previous year; the next ratio was 467·0 per 1,000 among men over 30 years of age, then 448·0 in men under 20 years, followed by 335·0 among men between 25 and 30 years. Compared with results in the previous year there is a decrease in the admission rate among men between 20 and 25 years, but an increase is observed in the rates at all other periods of age. The highest mortality ratio was 17·62 per 1,000 in men over 30 years of age, the next was 7·87 among men under 20 years of age, followed by 5·49 among men between 20 and 25 years of age, the lowest being 3·78 among men between 25 and 30 years. Compared with the previous year there is a decline in the ratios among men under 20 years of age, and among men between 20 and 25 years of age, but an increase is observed in the ratios of each of the other two periods. As to the influence of length of service in the Command, it is found that the highest rate of admissions was 1345·2 per 1,000 among men in their fourth year of service; in the previous return the highest ratio was one year earlier; the next ratio was 675·8 among men over four years, service, then 572·0 among men in their first year, followed by 512·0 among men in their third year, and by 407·9 among men in their second year of service. Compared with corresponding results in the preceding year a decline is observed in the admission rate of men in their second year of service, and also in that of men in their third year, but an increase has taken place in the ratios of admissions of men in other years of service in the Command. The mortality ratio was highest, 8·93 per 1,000, among men in their fourth year of service in the Command, then 7·81 among men over four years service, followed by 6·96 among men in their third year, and by 6·43 among men in their first year, the lowest being 4·35 among men in their second year of service in the Command. Compared with the previous year's return, a decline is observed in the mortality rate of men in their first year of service in the Command, but there is an increase in the admission rates of men at all other years of service.

The admissions, deaths, invaliding, &c., according to the different groups and orders of diseases are shown in Abstract III.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—*Eruptive fevers* were represented by a single case of measles which occurred at Cottonera. *Enteric fever* caused 18 admissions and 12 deaths, being in the ratios of 2·8 and 1·89 per 1,000 respectively. Compared with the corresponding ratios in the preceding year, there is an increase of ·3 per 1,000 in the admission rate, and one of ·98 in the death rate, but compared with the average ratios for the preceding five years there is a decline amounting to 11·9 in the rate of admission, and one of 1·26 in that of mortality. The per-centage of mortality to attack was 67 as compared with 36 in the pre-

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ceding year, and with 21 the average per-centage for the preceding five years. Of the cases 6, and 5 deaths, were treated in Valetta Hospital, 10 with 6 deaths at Cottonera Hospital, one at Forrest Hospital, and one occurred at Gozo with fatal result. Out of the 18 men attacked 9 were under one year's service, and 12 had served in Malta under one year. Eight cases occurred in summer, 3 in autumn, and 7 in the winter months. The Principal Medical Officer, Surgeon-General D. A. Campbell Fraser, remarks that, "although the history of each of these cases was carefully inquired into, nothing new was discovered regarding the origin of the disease. No particular insanitary condition of the barracks or their surroundings could be detected, nor any special condition which did not equally affect the garrison generally." The medical officer in charge at Cottonera remarks that "one of the causes of the fatality of enteric fever is its insidious beginning. On inquiry it almost invariably turned out that the man attacked had felt out of sorts for a week or ten days previous to reporting sick. When the disease was taken from the beginning it generally proved amenable to treatment and nursing." As to the cause of the disease, he thinks that most probably the insanitary condition of the houses frequented by men outside the various barracks were in fault, rather than any defect inside barracks or quarters. The medical officer in charge at Valetta reports that the large mortality of these cases is no doubt explained by many cases of enteric fever being returned under simple continued fever, an error which was dissipated by examination after death. He remarks also as to origin of the disease, that the causes can be found everywhere in Malta, and a defective arrangement of house drains is perhaps the principal among the civil population, with whom, of course, soldiers are much in contact.

The admissions for *simple continued fever* are returned as 452, and 3 deaths are shown, being in the ratios of 71·2 and 47 per 1,000 respectively. Compared with the corresponding rate in the preceding year, the admission rate shows a decline of 32·4, and compared with the similar average ratio for the preceding five years a decline of 58·9. The mortality rate is lower in these comparisons by 80 and 08 respectively. It is remarked by the medical officer in charge at Valetta that under this head were necessarily included cases of febricula, lasting only a few days, depending on chill, exposure to the sun, or errors in diet. It also embraced a large number of cases which, for want of a better name, are called Malta fever, and probably some mild cases of enteric fever. "Malta fever is a well-defined disease, depending on a specific poison or germ, which, according to Surgeon Bruce, pursues a totally different course when cultivated in gelatine from the bacillus associated with enteric fever. In the earlier stages it is often impossible to discriminate between Malta fever and enteric fever, but so far as treatment is concerned it is not a matter of great consequence." Many of the cases were severe, and were followed by protracted convalescence with relapses and complications of rheumatism, sciatica, and general debility.

*Dysentery* caused 27 admissions and 4 deaths, being in the ratios of 4·6 and 63 per 1,000 respectively. Compared with corresponding ratios in the preceding year, an increase of 9 is observed in the admission rate, and one of 27 in the death rate. 17 of the admissions and one death occurred at Cottonera, most of them were of a mild type and readily yielded to treatment. 4 cases occurred at Citta Vecchia and one death, 3 cases at Valetta and 2 deaths, 2 cases at Gozo and one at Forrest. Two of the fatal cases were transferred from troopships.

*Malarial Fevers.*—12 admissions are recorded, 10 being cases of ague and 2 cases of remittent fever. The admission ratio, 1·9 per 1,000, is below that in the preceding year and considerably below the average.

*Septic diseases* were represented by a single case of erysipelas, which occurred at Gozo.

In the next sub-group, venereal disease, *primary syphilis* shows 84 admissions, equal to 13·2 per 1,000, and the number constantly sick was 8·23 or 1·29 per 1,000. In the previous year these ratios were 15·5 and 1·19 per 1,000 respectively. By adding to the above the sickness from simple venereal ulcer, 93 admissions and 6·56 constantly sick, the ratios of admission and constant inefficiency for primary venereal sores are obtained,

and are 27·9 and 2·33 per 1,000 respectively. If these are compared with the corresponding ratios for the preceding year, it will be seen that there is a decline of 5·6 in admission rate, and one of ·44 in that of constantly sick; and compared with the similar average ratios for the preceding five years the decline in admission equals 13·2, and that in constantly sick 1·11 per 1,000. *Secondary syphilis* caused 86 admissions, and 7·79 men were constantly sick, the ratios being 13·6 and 1·23 per 1,000 respectively, which are lower than the quinquennial average rates by 2·6 and ·03, but higher than the corresponding ratios in the previous year by 5·8 and ·42 per 1,000 respectively. *Gonorrhœa* caused 338 admissions and 21·33 men were constantly sick with this affection. The ratios were 53·2 and 3·36 per 1,000 respectively. These also are above the ratios in the preceding year by 18·1 and ·96, but are below the average ratios by 1·3 and ·86 respectively. The total admission ratio for all forms of venereal disease was 94·7 per 1,000, which is above that in the previous year by 18·3, but below the quinquennial average rate by 16·9. The total ratio of constant inefficiency on account of these diseases was 6·92 per 1,000, which is an increase on the last year's rate by ·94, but a decline of 1·40 from the average rate. The Principal Medical Officer remarks that "the number of admissions for venereal disease actually contracted in this island, where a Contagious Disease Act is in force, is not comparatively large, the cases admitted for the most part being transfers from troopships on the disembarkation of troops arriving from home, and other details arriving from time to time for duty in the garrison."

*Parasitic diseases* gave 17 admissions, chiefly cases of *tænia solium*; *alcoholism* shows 14 cases, of these two were delirium tremens, one of which was fatal; the admission rate, 2·2 per 1,000, is a little lower than in the previous year. *Debility* was the cause of 74 admissions, equal to a ratio of 11·7 per 1,000, which is lower than the ratio in the preceding year by 1·2, and is also below the average rate; most of the cases were the result of protracted fevers and constitutional delicacy.

*Rheumatism*.—143 cases are returned, of which 2 were rheumatic fever, with fatal result in one instance. The admission rate, 22·5 per 1,000, is below that of the preceding year by 6·6, and considerably below the average rate of the previous five years. As in other years, it is stated that these cases were for the greater part the sequelæ of climatic fever.

*Tubercular disease* of the lung caused 11 admissions and 3 deaths, including that of an invalid, being in the ratios of 1·7 and ·47 per 1,000 respectively, both being lower than corresponding ratios in the preceding year.

*Other general diseases* gave 19 admissions, comprising 16 cases of non-malignant growth, 2 of anæmia, and one of purpura.

**LOCAL DISEASES.**—*Diseases of the Nervous System*.—36 admissions are returned and 2 deaths, being in the ratios of 5·7 and ·31 per 1,000 respectively. The admission ratio scarcely differs from that in the preceding year, but is a good deal below the average. There were 7 cases of mental disease, and of the remainder the principal cause of admission was neuralgia. The deaths were one from abscess of the brain and one from apoplexy.

*Diseases of the Eye* were more prevalent than in the previous year, but less so than the average. The admissions, 69, giving a ratio of 10·9 per 1,000, were principally due to conjunctivitis.

*Diseases of other Organs of Special Sense* gave a ratio of admission of 12·0 per 1,000, which is above the average rate as well as that of the previous year. All the admissions, except two cases of nasal affection, were due to aural disease, chiefly inflammation of external meatus.

*Diseases of the Circulatory System*.—The admissions numbered 51, being in the ratio of 8·0 per 1,000. This is only about half the average rate, but is somewhat in excess of the rate in the previous year. Over two thirds of the admissions were for palpitation, and among the remaining cases were six of valve disease of the heart, one of which proved fatal.

*Diseases of the Respiratory System* were the cause of 127 admissions and 5 deaths, including that of an invalid, being in the ratios of 20·0 and ·79 per 1,000 respectively. The ratio of admission exceeds that in the previous year



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by 4·5, but is still a good deal below the average rate. The mortality rate, on the other hand, is below the previous year's rate and slightly above the average. Bronchial affections caused two thirds of the admissions, sudden variation of temperature and want of ordinary care on the part of the men being the chief causes of these complaints. Among the other cases were 15 of pneumonia and 12 of pleurisy. Of the deaths 3 were due to pneumonia and 2 to pneumonic phthisis.

*Diseases of the Digestive System* caused 569 admissions and 3 deaths. The ratios of admission and mortality, 89·6 and ·47 per 1,000, were in excess of those in the preceding year by 4·5 and ·11 per 1,000 respectively but both were below the corresponding average ratios. The principal causes of admission were affections of the mouth and throat 167 cases, diarrhoea 154, dyspepsia 120, and hepatic disease, including 41 cases of jaundice, 74. The three deaths were all due to hepatic abscess. At Cottonera Hospital there were, it is stated, a few severe cases of diarrhoea, which resembled cholera in great measure and gave rise to considerable anxiety.

*Diseases of the Lymphatic and Glandular System.*—The admissions under this head were only 29 in number, the ratio being 4·6 per 1,000, below the average rate and lower than the last year's rate by 1·8.

*Diseases of the Urinary System* caused only 14 admissions, more than half being cases of incontinence of urine; *diseases of the generative system* gave 182 admissions, half being for simple venereal ulcer, the remainder being chiefly cases of balanitis, orchitis, and urethral stricture, the admission rate, 28·6 per 1,000, has declined by 2·7 from that in the previous year; *diseases of the organs of locomotion* caused 40 admissions, over three fourths being cases of synovitis; the admission rate, 6·3 per 1,000, scarcely differs from the last year's rate and is but little in excess of the average rate; *diseases of the connective tissue*, with a ratio of 26·6 per 1,000, though less frequent than usual, were about the same as in the previous year.

*Diseases of the Skin* caused 255 admissions, being in the ratio of 40·1 per 1,000, which is above the corresponding rate in the previous year by 6·3, though a good deal below the average rate. The principal causes of admission were ulcers, boils, eczema, and scabies.

*Poisons.*—One case of alcoholic poisoning is returned, a man having drank a very large quantity of spirit was brought to hospital in a semi-comatose condition and died a few hours after admission.

*Injuries.*—The admission ratio was 86·7 per 1,000, which is almost identical with the corresponding rate in the previous year. There were two admissions for general injury and two deaths. The causes of admission were sunstroke and multiple injury, the last-named was a case of suicide, the man having jumped from a roof; the other death was due to accidental drowning. The admissions for local injury were 536 in number, contusions, wounds, and sprains being very numerous, of the last-named no less than 90 sprains of the ankle are returned. The Principal Medical Officer remarks that the streets of Malta contribute greatly to the local injuries of the troops, the town of Valetta especially being a network of shelving precipitous streets with here and there an almost endless succession of steps, and fractures, contusions, sprains, &c. frequently result in consequence. There were two deaths, one from wound of throat self-inflicted with a razor while in a state of temporary insanity, and the other from fracture of the base of the skull, the result of a fall into a ditch in the dark.

*Invaliding.*—The number of men invalided during the year was 77, being in the ratio of 12·12 per 1,000 of strength, which is fractionally in excess of the corresponding rate in the preceding year, but below the average ratio for the preceding ten years by 15·36 per 1,000. Excluding detachments and corps only a short time in garrison, the highest invaliding ratio was 55·11 per 1,000 in the 2nd Battery, 1st Brigade, Northern Division, Royal Artillery, quartered at Fort St. Angelo, and other forts; the next, 18·27 per 1,000, being in the 1st Battalion, Black Watch, at Lower St. Elmo. In some batteries there was no invaliding, and low ratios, 5·06 and 6·88 per 1,000 respectively, occurred in the 1st Battalion Royal Berkshire Regiment and the 1st Battalion Dorset Regiment. With regard to the ages of the men invalided, 40, or 12·21 per 1,000, were between 20 and 25 years of age, 25, or 11·82 per 1,000, between 25 and

30 years, 11, or 24·23 per 1,000, over that age, and 1, or 1·97 per 1,000, under 20 years of age. Compared with results in the preceding year, a decline is observed in the proportions under 20 years, and from that to 25 years of age, but an increase has occurred in the proportions in the later age periods. As to service in the Command, 42 men, or 18·28 per 1,000, were invalided in their second year of service in the Command; 20, or 8·64 per 1,000, in their first year; 7, or 6·09 per 1,000, in their third year of service; 5, or 14·88, in their fourth year &c. Compared with the preceding year there is an increase in the proportion of invaliding in the second year of service, but decrease in the proportions in other years. The principal causes of invaliding were fevers 10 cases, or 1·57 per 1,000, diseases of the respiratory system 10 cases, including 3 of pneumonic phthisis, debility 9 cases, or 1·41 per 1,000, nervous affections 10 cases, including 4 of mental disease, aural affections 6 cases, tubercular disease of the lungs 6 cases, &c. The number of men finally discharged the service by invaliding was 56, equal to 8·81 per 1,000, which is above the ratio in the preceding year by 1·72 and below the decennial average rate by 5·57. The principal disabilities necessitating discharge were nervous diseases 9 cases, or 1·41 per 1,000, including 2 cases of mental disease, 8 cases of respiratory disease, including 5 from pneumonic phthisis, 7 of tubercular disease of the lungs, &c.

**Officers.**—The average strength was 196, and there were 118 attacks of illness, 4 deaths, and 4 officers were invalided. The ratios of prevalence of sickness and of mortality, 602·0 and 20·40 per 1,000 respectively, have increased by 102·0 and 3·74 as compared with corresponding rates in the previous year; but the invaliding ratio, 20·40 per 1,000, has declined by 1·82. The principal causes of illness were fevers 38 cases, including 2 of enteric fever, rheumatism 9 cases, bronchitis 6 cases, diarrhoea 10, hepatic diseases 6, and injuries 18 cases. The deaths were one case returned as simple continued fever, one of enteric fever, one of meningitis, and one of gunshot wound, suicidal, while in a state of temporary insanity. The causes of invaliding were enteric fever, debility, rheumatism, and synovitis one case respectively.

**Women.**—The average strength is shown as 267. There were 234 cases of sickness, equal to a ratio of 876·4 per 1,000, and 5 deaths, equal to a ratio of 18·73 per 1,000. Compared with the previous year's results, a decline of 88·0 has occurred in the rate of sickness, and one of 12·38 in that of mortality. The principal diseases treated were fevers 35 cases, including 1 of enteric fever, debility 54 cases, rheumatism 11, nervous affections 15, chiefly neuralgia, bronchitis 11, dyspepsia 11, and uterine affections 21 cases. The causes of death were fevers 2 cases, and puerperal septicæmia, dementia, and burn one case respectively.

**Children.**—406 is shown as the average strength; the number of cases treated was 361, and the number of deaths 29. The ratio of sickness, 889·2 per 1,000, is an increase of 299·2 per 1,000 over the rate in the preceding year, but the death rate, 71·43 per 1,000, shows a decline of 2·35. Among the cases treated were 27 of measles, 3 of diphtheria, 40 of simple continued fever, 27 of debility, 26 of conjunctivitis, 54 of bronchitis, 50 of diarrhoea, 14 of teething, 13 of eczema, &c. The causes of death were debility 4 cases, convulsions 4, teething 3, immaturity at birth 3, diphtheria 2, diarrhoea 2, and simple continued fever, abscess of brain, meningitis, aural disease, croup, pneumonia, gastritis, enteritis, abscess, and accidental poisoning by strychnine one case respectively.

**Sanitary Conditions.**—The Principal Medical Officer reports that the climate of Malta during the year compared satisfactorily with that of any recent year; the summer in particular being exceptionally cool and pleasant. The sanitary conditions generally of the hospitals and of the barracks, many of which are very old casemated buildings constructed mainly with the object of defence, hygienic requirements taking a secondary place only, were satisfactory. Cleanliness was maintained throughout, and defects of construction affecting ventilation which could be dealt with were either removed or as far as possible corrected. The civil authorities did a good deal during the year to enforce the practice of cleanly habits by the occupants of the thickly populated districts surrounding the Valetta Station Hospital and many of the barracks, and some sanitary improvements of more or less importance were carried out by them in these neighbourhoods.

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The strength of the troops was in certain instances, during the early winter months in particular, in excess of the barrack accommodation; this was met by handing over three officers' rooms for the use of the men of the artillery at St. Elmo, by accommodating a few men in tents, and by temporarily closing the Sanitarium Citta Vecchia and handing over that building for the use of the troops. During the summer months half of the men slept in tents, but by the end of the year there were no tents in use, all the men having returned to quarters.

It is stated that it was probable the garrison would be increased, and to meet the extra accommodation required for the troops huts would be sent out from England. It was proposed that there should be a redistribution of the troops occupying certain barracks, with the result, it is calculated, of increasing the cubic accommodation. The accommodation for the sick in hospital was good and sufficient throughout the year.

Except in a few instances, there are no means of warming the men's barrack rooms, but they are well lighted by gas or oil.

The means of ablution and cleanliness are sufficient, and are freely made use of by the men.

The water supply is generally good and sufficient. At Pembroke camp the supply of drinking water is obtained locally and not from the Vignacourt aqueduct, but it was expected that this service, which was already in hand, would be completed before long. The latrines, urinals, ashpits, &c. are reported to be in a good sanitary condition, and the drainage was carefully attended to.

The rations were generally reported to be good and sufficient, and the cooking to have been sufficiently varied.

The clothing was suitable to the season of the year, the bedding of good quality, and sufficient. The duties of the men were not prejudicial to health. Gymnastic instruction was carried out with benefit to health. The recreation rooms provided are well lighted and satisfactory generally, and are in constant use by the men.

The following are among the more important sanitary services which were carried out during the year. At Verdala barracks improvement in the ventilation of six barrack rooms. At Fort Manoel improvements in drainage of barrack rooms in Cavalier Curtain, St. John's Curtain, and Notre Dame Curtain, and the conversion of existing water latrines into dry-earth latrines. At Fort Lascaris the drainage system was connected with the main drain, and at Fort St. Angelo some latrines were moved to a new site. In addition to the above ablution rooms were provided to the soldiers' quarters in the Salvatore counter-guard; ventilating shafts were provided at Lower St. Elmo; three new windows in a ward of the sea front of the hospital at Valetta; provision of latrines at Citta Vecchia Sanitarium; and improvements in drainage at the Auberge de Aragon, the Auberge de Castile, and the military prison Corrodino.

### ROYAL MALTA FENCIBLE ARTILLERY.

The average annual strength of this corps was 363 non-commissioned officers and men, and the accompanying table shows the chief statistics of their sickness and mortality:—

| 1888.<br>Average Strength. | Admissions. | Deaths          |              |        | Invalids   |                     | Average daily Sick. | Ratio per 1,000 of Strength. |         |                     |                              |                  |
|----------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|------------------------------|---------|---------------------|------------------------------|------------------|
|                            |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |                     | Admissions.                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| 363                        | 216         | —               | —            | —      | —          | 5                   | 9.70                | 205.0                        | —       | —                   | 13.77                        | 22.72            |

Compared with the corresponding results in the preceding year, the admission ratio shows a decline of 66·1 per 1,000, and the constantly sick rate an increase of 1·56, and compared with corresponding ratios for the average of the previous 10 years, the decline in admission rate is equal to 70·0, and the increase in the rate of constant inefficiency through sickness to 2·15 per 1,000. There was no mortality in the year under report. The average sick time to each soldier was 9·78 days, being longer than in the preceding year by ·60 of a day, and than the decennial average period by ·81 of a day. The average duration of each case of sickness was 16·43 days, which, in the above comparisons shows an increase of 2·54 days and 2·94 days respectively.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—There were 24 admissions for simple continued fever, equal to a rate of 66·1 per 1,000, which is slightly in excess of the corresponding rate in the preceding year. Only 6 of the cases were of any severity, the remainder were cases of febricula, resulting from cold or error in diet, which quickly yielded to simple treatment and rest. One case of mumps is returned; the disease was prevalent at the time among children.

In the sub-group of venereal diseases 26 admissions in all are shown, 6 being for primary syphilis, 6 for secondary syphilis, and 14 for gonorrhœa. The total admission ratio was 71·6 per 1,000, which is higher than the corresponding ratio in the previous year by 24·4; and the number of men constantly inefficient on this account was 2·76, equal to a ratio of 7·61 per 1,000 as compared with 3·39 in the preceding year.

Rheumatism caused 9 admissions, one being for rheumatic fever; the remainder were simple cases. The remaining admissions for general diseases comprised two cases of debility, one of scrofula, and one of anæmia.

**LOCAL DISEASES.**—Nervous diseases caused 3 admissions, two being for neuralgia; ophthalmic affections gave 7 admissions, mostly simple conjunctivitis. Diseases of the circulatory system were represented by a single case of palpitation; respiratory diseases caused 16 admissions, of which 12 were cases of bronchitis; and disorders of the digestive system showed 40 admissions, half of which were on account of affections of the mouth and throat; the majority of the remainder being due to diarrhœa or colic. The remaining admissions for local diseases were 35 in number, 24 being for affections of the cutaneous system, chiefly boils.

Injuries were rather more frequent than in the previous year, the number of admissions, 50, having increased by 7. None of them were very serious, and most were contusions, wounds, and sprains.

*Invaliding.*—The number of men invalided was 5, the ratio being 13·77 per 1,000, lower than in the previous year, and below the average rate.

*Officers.*—The average strength was 21, and there were 18 cases of sickness. Bronchitis and sore throat caused most sickness. There was one death from Bright's disease.

*Women and Children.*—The average strength of women was 40, and there were 12 cases of sickness, which require no comment. The average strength of children was 133, and there were 86 cases of sickness and 11 deaths; the ratio of prevalence, 646·6 per 1,000, is higher than the preceding year. Measles was prevalent, 32 cases and 2 deaths. Of the remaining admissions simple continued fever, teething, and diarrhœa were the chief causes. Death also resulted from teething in 3 cases, pneumonia 2, diarrhœa 2, pericarditis 1, and bronchitis 1 case.

*Sanitary Conditions.*—The medical officer in charge, Surgeon-Major L. Manché, M.D., reports that cleanliness was carefully attended to in the barracks, and the buildings kept in good repair. Ventilation was satisfactory, and there was no overcrowding; during the summer months one half of the men slept under canvas to increase the cubic space. Latrine accommodation requires more perfect ventilation; flushing is satisfactorily performed. Ablution and bath rooms satisfactory. With regard to rations, the medical officer in charge reiterates his opinion that to ensure efficiency the men should receive their rations in kind, and that the money allowed in lieu of rations should be discontinued. Attention is given to the canteen, where the supplies are of good quality and sold at a cheap rate.

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*Recruiting.*—89 recruits were inspected during the year, and of these 47 were found fit for service. Out of the number rejected 22 were refused for being under chest measurement and 10 for defective vision.

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## III.—CYPRUS.

The force serving in Cyprus during the year was composed of the headquarters and four companies of the 1st Battalion Royal Berkshire Regiment until the 3rd February, which then proceeded to Malta on relief by the 1st Battalion Yorkshire Regiment from Egypt. In addition to the above there were detachments of Departmental Corps and Garrison Staff throughout the year.

The principal statistics of sickness and mortality among the troops are shown in the following table:—

| 1888.<br>Average Strength. | Admissions. | Deaths          |              |        | Invalids   |                     | Average daily Sick. | Ratio per 1,000 of Strength. |         |                     |                              |                  |
|----------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|------------------------------|---------|---------------------|------------------------------|------------------|
|                            |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |                     | Admissions.                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| 855                        | 828         | 3               | —            | 3      | 4          | 4                   | 46·79               | 966·1                        | 3·51    | 4·68                | 4·68                         | 54·72            |

Comparing this table with that for the preceding year, it will be observed, first, that the average annual strength of the troops is nearly doubled, owing to the substitution of an entire infantry regiment for a wing and headquarters. The admission ratio is higher than that in the preceding year by 256·3 per 1,000, and the constantly sick rate by 17·29, but the death rate is lower by 2·85. The large increase in the sick rates is due, as will presently be shown, to greater prevalence of venereal diseases. Comparing these ratios with the corresponding average ratios for the preceding 10 years, a marked decrease is observed in all, but this is owing to the very high ratios of sickness and mortality which existed in the early years of the occupation of the island. The average sick time to each soldier was 20·02 days, and the average duration of each case of sickness 20·73 days, the former being longer by 6·36 days, and the latter by 1·48 days, than the corresponding period in the preceding year, while compared with similar average periods for the previous 10 years the average sick time is shorter by over five days, and the average duration of each case of sickness is longer by three and a half days.

The stations occupied by troops during the year were Polimedia and Limassol, Nicosia, Troodos, and Peripedia and Zeigoh. The two first were occupied from the commencement of the year to the beginning of June, and again from the beginning of October to the end of the year; at Nicosia there was a detachment from February to the beginning of June; from June to October the whole of the troops were quartered at Troodos; and at Peripedia and Zeigoh, camps on the line of march from Troodos to Polimedia, were two companies during the months of October and November.

In Abstract XXXIX., in which there is a table showing the relative sickness of corps, it will be observed that the ratios of admission and inefficiency from sickness in the 1st Battalion Yorkshire Regiment are high, it must be borne in mind, however, that this is in great measure due to the prevalence of venereal disease, and also that this regiment had only just arrived in the

Command. The three deaths which occurred were in that regiment, two from *Cyprus* disease, the other from violence. The health of the Garrison Staff and Departments was good.

Examining into sickness according to age, it is observed that the admission rate among men under 20 years of age was 678·6 per 1,000; between 20 and 25 years 1136·0; in the succeeding quinquennium 834·6, and over that age 775·5. In the previous year, also, the highest admission ratio was among men between 20 and 25 years of age. The deaths were one, a man between 20 and 25 years of age, one in the next quinquennium, and one over 30 years of age.

With regard to service in the Command, the admission rate of men in their first year of service is found to have been 923·1 per 1,000; among men in their second year of service it rose to 1716·7, but the average annual strength was small. All the deaths took place in men in their first year in the Command.

The admissions and deaths, &c. in the different groups and orders of diseases are set forth in Abstract IV.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.—Enteric fever** caused 6 admissions and 1 death, the admission ratio, therefore, was 7·0, and the mortality ratio 1·17 per 1,000, which differ only fractionally from the corresponding ratios in the previous year, but are below the average ratios for the preceding five years by 15·6 and 6·24 respectively. The per-centage of mortality to attack was 16·7, about half the average per-centage for the previous five years. Two of the cases occurred at Troodos, and one proved fatal; three cases occurred at Camp Peripedia, and in the sixth case the disease was contracted at the Dépôt Limassol, where several cases also occurred among the women and children.

With regard to the number of cases of enteric fever which occurred in the garrison, the Senior Medical Officer, Brigade Surgeon G. Elmsley Will, remarks that it is stated that the disease has been prevalent among the civil population ever since the occupation, but few cases have occurred among the troops, with the exception of men coming from Egypt with the disease, or men in a very weak state, rendering them more liable to disease. During the past year 16 patients in all (men, women, and children) have been attacked by the disease; six of them were supposed to have contracted it on the road to, or when living at, Troodos, six at Dépôt Limassol, three at Peripedia, and one at Polymedia. The cause of most of these cases was obscure, and in most it was not possible to trace their origin directly to insanitary conditions. The Senior Medical Officer states, however, that formerly the sanitary arrangements at Troodos was very faulty in regard to latrine arrangements, but this has been changed since 1885. Of late it is said the ground just below the commissariat lines was overcrowded with natives and animals, and the native bazar, near the hospital, is objectionable, as it is impossible to get the people to keep the place clean. With these exceptions nothing objectionable was known at Troodos from a sanitary point of view. The disease is believed to have originated on the road from Nicosia to Troodos, or at Troodos itself, and it was afterwards conveyed to the Dépôt Limassol, where it spread. At Peripedia it is stated that at first the water supply was from a stream which was liable to contamination, and the cases at this place probably originated therefrom; but this condition was remedied by the water supply being obtained from a spring.

*Simple continued fever* caused 51 admissions, equal to a ratio of 59·6 per 1,000, which is higher than the corresponding rate in the previous year by 17·2, but is considerably below the average rate for the preceding five years. It is stated that of the 51 admissions 39 men had served in Egypt, and 17 of these had suffered from the disease previously.

*Dysentery* was the cause of 17 admissions, being in the ratio of 19·9 per 1,000, which is lower than the ratio in the previous year by 3·4, and is also below the average. All the men attacked, with but one exception, had served in Egypt, and 9 of them had suffered from this disease while there.

*Malarial Fevers.*—Under this head 62 admissions are returned. The admission rate, 72·5 per 1,000, differs very slightly from that in the previous year, but is a good deal below the quinquennial average rate. 59 of the cases

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were ague, and 3 remittent fever. 39 cases of ague and 2 of remittent fever occurred at Polimedia; 17 of ague and one of remittent fever at Troodos, 2 of ague at Nicosia, and one at Peripedia. No deaths occurred.

*Veneral Diseases.*—There were 99 admissions recorded for *primary syphilis*, equal to a ratio of 115·8 per 1,000, as compared with 42·4 in the previous year, which, however, was a good deal below the rate in 1886. Adding the admissions for simple venereal ulcer, 59, the ratio for primary venereal sores amounted to 184·8 per 1,000, an increase of 142·4 on the corresponding rate in the previous year, and above the average rate of the previous five years by 99·9. *Secondary syphilis* was the cause of 71 admissions, or 83 per 1,000, which is higher than the previous year's rate by 59·7, and than the quinquennial average rate by 55·1. *Gonorrhœa*, with 117 admissions, equal to a ratio of 136·8 per 1,000, shows an increase of 16·1 as compared with the previous year's rate, and one of 64·7 as compared with the average rate. Including all forms of venereal disease, the total ratio of admissions was 404·6 per 1,000, which is more than double the corresponding ratio in the previous year, as well as more than double the average rate. The total ratio of constant inefficiency from these diseases in the year under report amounted to 27·46 per 1,000, being greater than the rate in the preceding year by 15·11, and than the quinquennial average rate by 15·79. It is observed that 50 per cent. of the average number constantly sick were men suffering from venereal diseases, and that the increase in these affections almost entirely accounts for the total increase in the ratio of constantly sick as compared with the previous year, for if the sick rate for venereal diseases be deducted there is but very little difference between the total sick rate for all other diseases in the year under report as compared with that in the previous year.

*Rheumatism* caused 26 admissions, being in the ratio of 30·4 per 1,000, which is an increase of 11·3 on the rate for the previous year, and is above the average rate. Among the cases treated was one of rheumatic fever.

*LOCAL DISEASES.*—*Diseases of the Nervous System* caused only 5 admissions, which included 3 cases of neuralgia, one of dementia, and one of apoplexy, which had a fatal result. Diseases of organs of special sense were represented by 8 cases of *ophthalmic affection*. There was no instance of *disease of the circulatory system*, but *diseases of the respiratory system* caused 18 admissions, equal to 21·1 per 1,000, which is a higher rate than in the previous year, and also above the average. Among the cases treated were 8 of pneumonia and one of pleurisy. *Diseases of the digestive system.*—75 admissions are returned, equivalent to a ratio of 87·7 per 1,000, which is above the last year's ratio by 13·6, but is below the average. The principal causes of admission were follicular tonsillitis, dyspepsia, and diarrhoea, and there were 8 cases of hepatic disease. The number of admissions, 46, or 53·8 per 1,000, for affections of the *lymphatic and glandular systems* was large as compared with previous years. This was also the case with *diseases of the generative system*, with a ratio of 83·0 per 1,000; the greater part of this ratio was dependent on admissions for simple venereal ulcers. *Diseases of the connective tissue* gave an admission rate of 24·6 per 1,000, which is about the average, though below the rate in the previous year. *Diseases of the Skin* were at the rate of 40·9 per 1,000, which is below the rate in the preceding year as well as the average rate.

*Injuries.*—Under this head 79 admissions are returned, equal to a ratio of 92·4 per 1,000, which is about the average rate for the preceding five years, but is lower than in 1888. Contusions, wounds, or sprains caused most of the admissions, and there were four cases of fracture and two of dislocation. One death occurred from wound of throat, a man suffering from enteric fever having cut his throat while in a state of temporary insanity.

*Invaliding.*—Four men were invalided home during the year. The rate, 4·68 per 1,000, was considerably lower than the average and than the rate in the previous year. Three of the men invalided were in their first year of service in the Command, and one was in the third year. The men invalided were at various ages from under 20 to over 40 years of age. The causes of invaliding were constitutional syphilis, dementia, ulcer of the cornea, and pneumonic phthisis respectively. The number of men finally discharged as medically unfit for further service was also 4, or 4·68 per 1,000, a marked

decline from rates in previous years. The disabilities necessitating discharge were keratitis, palpitation of the heart, pneumonic phthisis, and contraction of tendons.

*Officers.*—The average strength was 31, and there were 11 cases of sickness. The rate of prevalence was, therefore, 354·8 per 1,000, an increase on the preceding year. Among the cases were two of simple continued fever, one of enteric fever, one of dysentery, and one of ague. No death occurred.

*Women.*—The average strength was 39, and there were 18 cases of illness. The ratio of sickness was, therefore, 461·5 per 1,000, a considerable decrease from that in the previous year. Enteric fever caused 2 admissions and one death; the remaining admissions were for various causes.

*Children.*—The average strength was 71, and there were 18 cases of sickness, equal to a ratio of prevalence of 253·5 per 1,000, which is below the corresponding rate in the preceding year by 327·9. Five of the cases of illness were enteric fever. The deaths were due to scrofula, debility, diarrhoea, convulsions, and immaturity at birth respectively.

*Sanitary Conditions.*—The Senior Medical Officer reports that the sanitary state of the camp at Polimedia was highly satisfactory. Three main roads have been made through the camp, the side drains of which have materially assisted the surface drainage. The barracks consist of several rows of huts raised on stone buttresses allowing free ventilation underneath. The huts are in a satisfactory condition, and the means of ventilation are efficient. The recreation room was further enlarged during the year. The conservancy arrangements are by means of the dry-earth system, but it is said to be rather difficult to get it carried out properly. The water supply is conducted from a spring in a covered aqueduct to the camp, where it is stored in a large tank; the supply is abundant and the quality very good. The rations are generally satisfactory, the bread excellent and well baked, the beef very good, but the mutton, which is occasionally issued, is not of such good quality. Canteen supplies are generally good and moderate in price.

At Troodos only one company occupied the ground that had heretofore been occupied by the regiment stationed in Cyprus, the headquarters and remainder of the regiment were encamped on the ground which had been occupied by convalescents in former years. It is reported that there was some overcrowding in the vicinity of the commissariat lines, but this was to be attended to in the ensuing season. The sources of water are two springs, one about a mile away from the South camp, and the other over a mile from the North camp. The water was analysed and found very good. It was transported by donkeys from the springs to the camps, and there stored in chatties, which were fixtures belonging to the tents, but for use in subsequent seasons an engine has been provided, and pipes laid down through the camp.

The sanitary conditions at Nicosia are generally reported to be very satisfactory, but some of the huts are said to be old and shaky, and to require constant supervision, especially as regards the roofs; there is, however, ample accommodation, and the ventilation, warming, and lighting were satisfactory. The ablution arrangements were satisfactory, and conservancy properly attended to. The rations were generally good, and the means of cooking satisfactory.

The sanitary condition of the Dépôt Limassol is generally good. The barracks give sufficient accommodation for requirements and are properly ventilated. The surface drainage is as perfect as can be expected considering the almost entire absence of fall available, the drains are all open and above ground, they are cleaned daily, and by being kept in repair soakage of the ground is prevented. At Peripedia the sanitary condition of the camp was generally good, but the medical officer in charge did not think its proximity to a village advantageous, or to some low ground in front which is covered with water during the winter months, and becomes dry in the summer. As a consequence of the latter malarial fevers and dysentery prevail amongst the natives. The source of water supply was changed during the year consequent on the discovery of new springs nearer to camp, rendering it unnecessary to utilise the supply from Troodos, which may be liable to contamination in its course. The hospital was moved to Zeigoh at the end of October. This camp is well situated close to the Limassol Road, about 24 miles from



*Cyprus.*

Troodos, and 8 from Polimedia ; it is a level plain ending abruptly towards the east in a sudden declivity leading to the river, which runs past the camp to the sea, and on the left is the road, on the right a deep ravine, while towards the west it stretches away to reach another branch of the Limassol Road. The site has the double advantage of being well and naturally drained and possessing a large tree growth, besides being level, a great help towards pitching tents well. The water supply from a spring is perfect and absolutely free from contamination. The sanitation of this camp was carefully attended to and with satisfactory results.

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#### IV.—ON THE HEALTH OF THE TROOPS SERVING IN THE DOMINION OF CANADA.

##### *Sickness and Mortality.*

The average strength of the troops quartered in Halifax, which is the only station in Canada occupied by Imperial troops, was 1,329. The garrison was composed of three batteries Royal Artillery, two companies Royal Engineers, a regiment of Infantry, and small detachments of Departmental Corps.

The following changes were carried out during the year:—The 40th Company, Royal Engineers, arrived from Gibraltar in October in relief of the 27th Company. The 2nd Battalion West Riding Regiment arrived from Bermuda at the end of September in relief of the 2nd Battalion York and Lancaster Regiment for the West Indies. Drafts for the Royal Artillery and Royal Engineers also arrived in October.

| 1888.<br>Average Strength. | Admissions. | Deaths             |              |        | Invalids   |                        | Average<br>daily<br>Sick. | Ratio per 1,000 of Strength. |         |                        |                                    |                     |
|----------------------------|-------------|--------------------|--------------|--------|------------|------------------------|---------------------------|------------------------------|---------|------------------------|------------------------------------|---------------------|
|                            |             | In the<br>Command. | Of Invalids. | Total. | Sent Home. | Finally<br>Discharged. |                           | Admissions.                  | Deaths. | Invalids<br>sent Home. | Invalids<br>finally<br>Discharged. | Constantly<br>Sick. |
|                            |             |                    |              |        |            |                        |                           |                              |         |                        |                                    |                     |
| 1,329                      | 690         | 9                  | 3            | 11     | 36         | 27                     | 46·15                     | 519·2                        | 8·27    | 27·03                  | 20·30                              | 34·72               |

Compared with the corresponding ratios in the previous year, a decrease of 105·6 per 1,000 has taken place in the ratio of admission, and to a fractional extent in the constantly sick rate, but there is an increase of 2·81 in the death rate; while compared with the average similar ratios for the preceding 10 years the decrease in admission rate is equal to 218·4 per 1,000, and that in the rate of constant inefficiency through sickness to 4·26, the increase in the mortality rate being 2·94. The average sick time to each soldier was 12·71 days, which is fractionally shorter than in the previous year, and shorter by a day and a half than the corresponding decennial average period, but the average duration of each case of sickness, 28·48 days, is longer in both these comparisons by 3·71 days and 5·19 days respectively.

Taking individual corps, it is found that the highest ratio of admission occurred in the 2nd Battalion West Riding Regiment, and was 714·3 per 1,000, it must be remembered, however, that it was only in the garrison during the last three months of the year. In the York and Lancaster Regiment the admission rate was 483·8. The constantly sick rates of these two corps were 41·77 and 37·56 per 1,000, and the death rates 4·92 and 4·86 per 1,000 respectively. Of the batteries of Artillery, No. 3, 1st Brigade, Cinque Ports division, gave high ratios of sickness and mortality, admission being 612·6, death 18·02, and constantly sick 39·91 per 1,000, and No. 4 battery of the same Brigade also gave high ratios, 655·5 per 1,000 for admission, 8·40 for mortality, and 32·85 for constant inefficiency. The lowest ratio of admission was in No. 3 battery, 1st Brigade, London division, being only 358·5 per 1,000.

*Canada.*

With regard to age it is calculated that the ratio of admission among men under 20 years of age was 363·0 per 1,000, among men between 20 and 25 years of age it rose to 555·6, the ratio in the next quinquennial period being almost the same, 553·1, but it fell considerably among men over 30 years of age to 395·5. In the previous year also the highest admission rate was among men between 20 and 25 years of age, but in the succeeding quinquennium there was a considerable decrease. The highest death rate was among men over 30 years, 22·39 per 1,000, dependent on 3 deaths, followed by 10·89, dependent on 4 deaths, among men between 20 and 30 years. There were no deaths among men under 20 years, and 2, or 2·89 per 1,000, among men between 20 and 25 years. Taking service in the Command, it is observed that men in their first year gave an admission rate of 665·5 per 1,000, those in the second year one of 408·7, and those in their third year one of 321·4, but men over three years' service gave a slightly higher rate. In the previous year the highest admission rate was in the first year of service in the country. Out of the 9 deaths in the Command, 5 of them took place in men in their first year at the station, 2 in the second year, one in the third, and one over three years.

The admissions and deaths, &c. in the different groups and orders of diseases are shown in Abstract V.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—In the first sub-group of these diseases there were in all only 19 admissions, but still this was a greater number than in the previous year. Of the cases 3 were mumps, one was measles, 3 were simple continued fever, and the remaining 12 enteric fever. These cases give an admission ratio of 9·0 per 1,000, the ratio in the previous year as well as the quinquennial average ratio being only fractional. One death occurred, giving a ratio of ·75 per 1,000, and a per-centage of mortality to attack of 8. The Principal Medical Officer, Deputy Surgeon General E. G. McDowell, C.B., remarks that "the large number of admissions for enteric fever is striking. The cases were, generally speaking, of a mild type, fairly typical, with liability to relapse in the majority of them, and confined almost exclusively to men of the 2nd Battalion West Riding Regiment, which arrived here in September from Bermuda where the disease was very prevalent, and as the outbreak appeared immediately on their arrival it is thought that the disease was imported thence." The man who died from the disease had been attending on cases of enteric fever in hospital, and it is probable that the disease was contracted in this manner.

Under the sub-group of venereal diseases, *primary syphilis* shows 39 admissions, equal to a ratio of 29·3 per 1,000, an increase of 2·0 on that of the preceding year's rate. Adding the admissions for simple venereal ulcer, 20; the ratio for primary venereal sores amounts to 44·3 per 1,000, which is higher than the corresponding rate in the previous year by 3·0, but lower than the average similar ratio for the previous five years by 10·0. *Secondary syphilis* caused 23 admissions, equal to 17·3 per 1,000, which is considerably below, by 18·6, the corresponding rate in the preceding year, and below, by 19·7, the quinquennial average ratio. The admissions for gonorrhœa were 95 in number, or 71·5 per 1,000, a decline of 7·3 from the previous year's rate, and below the average rate by as much as 30·0 per 1,000. Including all forms of venereal disease, the total admission ratio amounts to 133·1 per 1,000, this is below the corresponding ratio in 1887 by 22·9, and below the average ratio for five years by 59·7. The ratio of constant inefficiency from all forms of venereal disease was 8·76 per 1,000, as compared with 10·18 in the previous year, and with a quinquennial average of 12·68 per 1,000.

*Rheumatism* was the cause of 56 admissions, of which 4 were cases of rheumatic fever. These gave a ratio of 42·1 per 1,000 as compared with 56·2 in the previous year, it is also lower than the average ratio for five years. This reduction is noticeable in a disease which in this station, with its variable climate and the severity of the winters, is generally high.

*Tubercular disease* of the lung caused 6 admissions and 3 deaths, including one of an invalid after leaving the Command.

**LOCAL DISEASES.**—*Diseases of the Nervous System.*—25 admissions are returned, equal to a ratio of 18·8 per 1,000, which is higher than the corresponding ratio in the preceding year by 3·2, and a good deal above the quinquennial average rate. Four of the admissions were for mental disease, and one, a case of mania, had a fatal termination. Among the remaining cases were 11 of epilepsy and 3 of paralysis. The death of one invalid from apoplexy is recorded.

*Diseases of the Organs of Special Senses* caused an admission rate of 21·0 per 1,000, being rather below the average rate, but above the last year's rate by 5·4. Of 28 admissions 18 were cases of ophthalmic disease, 7 of aural affection, and 3 of epistaxis.

*Diseases of the Circulatory System* were at the rate of 10·5 per 1,000, a decline of 8·2 from the previous year's rate, and also rather below the average. The admissions comprised 6 cases of valve disease of the heart, 6 of palpitation, one of endocarditis, and one of varicose veins. One death occurred from fatty degeneration of the heart.

*Diseases of the Respiratory System* caused an admission rate of 41·4 per 1,000, which is lower than the corresponding rate in the preceding year by 16·3, and is also considerably below the average rate. Of 55 admissions 43 were cases of bronchitis, 8 of pneumonia, 2 of pleurisy, and one each of asthma and laryngitis.

*Diseases of the Digestive System.*—90 admissions are returned, equal to a ratio of 67·7 per 1,000, which is a decline of 28·2 from the last year's rate, and is considerably below the average rate. As in the previous year, more than half the admissions, 49 cases, were caused by follicular tonsillitis; dyspepsia was also frequent, 18 cases, but the remainder of the admissions were for various causes.

*Diseases of the Lymphatic and Glandular System* caused 10 admissions, or 7·5 per 1,000, and *urinary affections*, 5 cases, or 3·8 per 1,000, both these ratios show a slight increase on the corresponding rates of last year.

*Diseases of the Generative System* with a ratio of 30·9 per 1,000 were less frequent than in the previous year, but *diseases of the organs of locomotion* with a ratio of 8·3 per 1,000 showed an increase.

*Diseases of the Connective Tissue* caused an admission rate of 23·3 per 1,000, which is an increase of 2·2, but *cutaneous diseases*, principally ulcers, boils, eczema, &c., only gave an admission ratio of 36·1 per 1,000 as compared with 46·1 in the previous year.

Under the head of *Poisons* is shown one case of alcoholic poisoning in a man brought to hospital in an insensible condition, and, in spite of persistent efforts made for his resuscitation, death resulted a few hours after his admission.

*Injuries.*—85 admissions and 3 deaths are recorded. The admission ratio, 64·0 per 1,000, is lower by 22·5 than in the preceding year. Of the admissions nearly six sevenths were from contusions, wounds, and sprains, and among the remainder were 8 cases of fracture and 2 of dislocation. One of the deaths was due to fracture of the skull supposed to have been caused by an injury received in a scuffle in the canteen; another death was from accidental gunshot wound during a shooting expedition, and the third death was also from gunshot wound, but was suicidal. The man while in a condition of temporary insanity shot himself through the head. No motive could be ascertained for the act.

*Invaliding.*—The number of men invalided to England during the year was 36, equal to a ratio of 27·08 per 1,000, which is an increase on the rate in the previous year of 16·16, and is greater than the average rate for the preceding ten years by 2·55. The great increase in invaliding as compared with the previous year is said by the Principal Medical Officer to be in a measure accounted for by the departure of the 2nd Battalion York and Lancaster Regiment for the West Indies and the consequent weeding of men whom it was deemed inadvisable to send there. It may in addition be remembered that the invaliding for 1887 was exceptionally small. The

*Canada:*

ratio of invaliding among men under 20 years of age was 22·22 per 1,000, among men between 20 and 25 years of age 23·09, and in the next quinquennium 40·87. Invaliding according to residence in the station was at the rate of 16·89 per 1,000 among men in their first year, 25·64 among men in their second year, and 39·29 among men in their third year of residence. The principal causes of invaliding were affections of the nervous system, 10 cases (including 5 of epilepsy and 2 of mental disease), urinary affections 4 cases, rheumatism, tubercular disease of the lungs, ophthalmic, and aural affections 3 cases respectively.

The number of men finally discharged as medically unfit for further service was 27, two of whom were discharged in the country. The ratio of discharge was 20·30 per 1,000, which is higher than that in the preceding year by 11·72, and than the decennial average rate by 1·29. The principal disabilities were nervous affections 7 cases, diseases of the circulatory system, eye and ear 3 cases each, and constitutional syphilis, tubercular disease, and diseases of the respiratory system, 2 cases respectively.

*Officers.*—The average strength was 63, and there were 16 attacks of illness, the ratio of prevalence of sickness was therefore 254·0 per 1,000, which is below the corresponding rate in the preceding year by 73·9. The chief causes of illness were follicular tonsillitis, injuries, and bronchitis. One death took place from accidental gunshot wound while out shooting.

*Women.*—The average strength is returned as 103, and there were 40 admissions and 2 deaths, being in the ratios of 388·3 and 19·41 per 1,000 respectively. Compared with corresponding rates in the preceding year there is an increase in the mortality rate, but the rate of prevalence of sickness remained the same. Among the cases treated were two of enteric fever, one of which was fatal. It is stated that the disease occurred among the women and children occupying the Pavilion barracks. An adjacent drain was found to be defective, causing subsoil contamination. Remedial measures were resorted to as soon as the defect was discovered, and with success, as the disease ceased. There were 13 cases of debility, and several of anæmia, follicular tonsillitis, uterine affections, dyspepsia, diarrhœa, and there was one fatal case of tetanus.

*Children.*—The average strength of children was 205, and there were 115 admissions and 8 deaths, being in the ratios of 561·0 and 39·02 per 1,000 respectively, the former being lower by 18·2, and the latter higher by 11·70 than the corresponding rate in the previous year. The principal causes of admission were bronchial affections 29 cases, diarrhœa 13, measles 12, mumps 12, and there were 6 cases of enteric fever. The deaths were due to diarrhœa in 4 cases, and to enteric fever, convulsions, bronchitis, and atelectasis in one case respectively.

*Sanitary Conditions.*—The Principal Medical Officer states in his report that the health of the troops was on the whole satisfactory throughout the year, and much care was exercised in the sanitary supervision of their surroundings. The water supply from lakes a few miles distant is ample and of excellent quality. The means of ablution are sufficient, and the bath rooms have hot water laid on, which is a necessity in such a climate. From time to time, as funds permit, the conservancy is being gradually changed to the dry-earth system, which is said to be now in satisfactory operation in most of the latrines, except those at Wellington barracks, which are regularly flushed. The lighting of these barracks is by kerosine oil and is indifferent, but the canteen, recreation rooms, and regimental guard rooms are lighted with gas. The rations and supplies generally are very good and rarely give rise to complaint.

The station hospital has ample accommodation for the sick; it is well ventilated and lighted, but there is much to be desired in the matter of heating, and the introduction of hot water or hot air pipes to this end has been again recommended. The building appropriated for the use of infectious diseases occurring in married families is said to be not very suitable, but it is very rarely required.

During the early part of the year severe frost prevailed, the weather was, however, clear and bracing. March was unusually tempestuous, and the summer was much retarded. Although the temperature in June reached as

high as 92°, the summer season generally was wet and comparatively cold. *Canada.* The year closed fair with the promise of a mild winter. The average temperature for the twelve months was 44.5° Fahr.

The following are the chief sanitary improvements completed during the year:—At the Pavilion barracks two old unused drains were taken up, and all drains thoroughly examined. The drains from hospital and Glacis barracks through Pavilion Square reconstructed. At the South barracks improvements in ventilation and disconnection of drains, and at Gun Wharf and Wellington barracks improvements in latrine arrangements.

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## V.—ON THE HEALTH OF THE TROOPS SERVING IN BERMUDA.

### *Sickness and Mortality.*

#### *Bermuda.*

The troops which served in Bermuda during the year included two batteries, Royal Artillery; one service company and a detachment submarine mining company, Royal Engineers; one infantry regiment (the 2nd Battalion West Riding Regiment until 22nd September, when it left for Halifax on relief by the 1st Battalion Leicestershire Regiment from England); detachments, Departmental Corps and Garrison Staff.

The subjoined table shows the principal statistics of sickness and mortality among the troops during the year:—

| 1898.<br>Average Strength. | Admissions. | Deaths             |              |        | Invalids   |                        | Average<br>daily<br>Sick. | Ratio per 1,000 of Strength. |         |                        |                                    |                     |
|----------------------------|-------------|--------------------|--------------|--------|------------|------------------------|---------------------------|------------------------------|---------|------------------------|------------------------------------|---------------------|
|                            |             | In the<br>Command. | Of Invalids. | Total. | Sent Home. | Finally<br>Discharged. |                           | Admissions.                  | Deaths. | Invalids<br>sent Home. | Invalids<br>finally<br>Discharged. | Constantly<br>Sick. |
|                            |             |                    |              |        |            |                        |                           |                              |         |                        |                                    |                     |
| 1,346                      | 928         | 4                  | —            | 24     | 12         | 10                     | 46·57                     | 639·4                        | 17·83   | 8·91                   | 7·43                               | 34·00               |

Compared with corresponding rates in the preceding year, the ratio of admission has declined by 119·5 per 1,000, and that of constantly sick by 7·53, but the rate of mortality has increased by 5·15, and compared with similar average rates for the preceding 10 years there is an increase of 44·4 per 1,000 in the admission rate, and one of 9·20 in the death rate, but the ratio of constant inefficiency through sickness has declined by 3·35. The average sick time to each soldier was 12·66 days, which is shorter than the corresponding period in the preceding year by 2·72 days, but is of equal duration with the average of similar periods for the preceding 10 years; the average duration of each case of sickness was 18·36 days, which is shorter in both the above comparisons by ·65 days and 1·28 days respectively.

In Abstract XXXIX. is a table showing the statistics of sickness and mortality in the particular corps in garrison. It will be observed that the annual ratios of admission and constantly sick were by far highest in the 1st Battalion Leicestershire Regiment, 1213·9 and 65·81 per 1,000 respectively; the mortality rate, 79·07 per 1,000, is very high, though the rate for the Medical Staff Corps exceeds it, but this is dependent on two deaths in a very small strength. The great amount of sickness and mortality in the Leicestershire Regiment was due to an epidemic of enteric fever which attacked this regiment almost immediately on its arrival in the Command.

The admission rate in the West Riding Regiment, which left for Halifax in September, was 638·2 per 1,000, and there was no mortality. Of 24 deaths 17 occurred in the Leicestershire Regiment, 3 in the Artillery, and the remainder in Departmental Corps.

Taking sickness according to age, it is found that the admission rate among men under 20 years of age was 652·2 per 1,000, that among men between 20 and 25 years of age 712·8, among men in the next quinquennium 750·0, and over that age 462·3. Mortality was at the rate of 21·73 among men under 20 years, 19·14 among men between 20 and 25 years, 11·90 among men between

25 and 30 years, and 9·43 among men over that age. In the preceding year the highest admission and mortality rates were among men between 20 and 25 years of age. *Bermuda.*

With regard to length of time in the Command, the admission rate for men in their first year was 629·9 per 1,000, for men in their second year 791·7, and for men in their third year 402·8. Mortality was at the rate of 38·85 per 1,000 among men in their first year in the garrison, and 6·72 in men in their second year of residence. The last year's return showed the highest admission rate among men in their first year in the garrison, and the highest mortality among men over two years' residence in the Command.

The admissions and deaths, &c. in the different groups and orders of diseases will be found tabulated in Abstract VI.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—The first sub-group of these diseases shows 176 admissions, of these two were cases of dysentery and one case of mumps. All the remaining admissions were for continued fevers, 45 being for *simple continued fever*, and 128 for *enteric fever*; among the latter there were 18 deaths. The ratio of admission for enteric fever was, therefore, 95·1 per 1,000, and the ratio of mortality 13·37. In the preceding year the ratios of admission and mortality were 42·2 and 6·76 per 1,000, and the average ratios for the previous five years were 26·40 and 5·16 per 1,000 respectively. The per-centage of mortality to cases treated in the year under report was 14, that of the preceding year 16, and the average for the previous five years 19·5. The high ratios of sickness and mortality for this disease in the past year are due to an outbreak in an epidemic form in the later months of the year.

The Principal Medical Officer, Deputy Surgeon-General F. Wade, reports that the disease was principally confined to the Leicestershire Regiment, which arrived from England on the 21st September; there had previously been eight cases, five at Prospect and three at St. George's, since the commencement of the year. With regard to the origin of the outbreak, he states his opinion that "there is no question that enteric fever has been for many years epidemic in these islands, and young soldiers arriving in the country in the autumn, when epidemic influences are rife, are particularly liable to develop the disease; in fact, all the regiments that have arrived here for some years in the autumn have been attacked by an epidemic of more or less severity, but that of 1888-9 has been unusually severe."

The water supply was carefully and frequently analysed, and the result was almost invariably satisfactory; the drainage is well laid; there is no possibility of any drain ventilating into any building on Prospect plateau occupied by troops; there was not, perhaps, quite as much water as was desirable for flushing purposes. The outbreak, therefore, could not well be attributed to any insanitary defect in connexion with the camp at Prospect.

Under instructions from England a committee was appointed to inquire into the sanitary state of Prospect camp and barracks, and to endeavour, if possible, to trace the cause of the epidemic; a number of persons unconnected with the service were invited to give evidence as to the sanitary state of Hamilton, and the local medical men as to the prevalence of the disease there. The four medical practitioners examined were unanimous in stating that enteric fever was almost always present in Hamilton, and the two who practise there stated, in addition, that they had treated a much larger number of cases in the last quarter of the year 1888 than in a similar period in any previous year.

The Principal Medical Officer also remarks that the type of the disease was extremely virulent, and many of the cases succumbed very rapidly. He thinks that though on post-mortem examination the typical lesions of the small intestine with most extensive ulceration of the Peyerian glands were invariably present, yet in many cases the disease did not follow exactly the same course as seen in England. Pulmonary complications were very prevalent, severe relapses occurred, and emaciation rapid and extreme. In no instance was there jaundice, and in none intestinal hæmorrhage; but epistaxis was frequent and severe, sometimes requiring plugging of the nares. In the cases which recovered sequelæ, such as thrombosis of the veins of the leg, occurred in two



*Bermuda.*

cases, and subacute periostitis of the femur in one case. The total number of cases which occurred was 138, and included, in addition to the 128 men, 2 officers, 7 women, and a child. Of the 128 cases among the men 109 occurred in the Leicestershire Regiment, and of the deaths 17 were in men of that regiment, and one in a man belonging to the artillery.

Of the 45 cases returned as simple continued fever the Principal Medical Officer remarks that some few may, perhaps, have been mild forms of enteric fever, but most of them occurred prior to the invasion of the epidemic, and, as there was no mortality among them, it is to be believed that the diagnosis was, generally speaking, correct.

*Malarial fevers* were, as in the previous year, represented by a single case of ague. These diseases are extremely uncommon amongst the troops, and ague is said to be almost unknown among the civil population.

In the succeeding sub-group it is observed that *primary syphilis* caused 34 admissions, equal to a ratio of 25·3 per 1,000, an increase of 10·1 on the corresponding rate in the previous year. If the admissions for simple venereal ulcer are added the ratio of admissions for primary venereal sores is found to be 27·5 per 1,000 as compared with 21·1 in the previous year, but is lower than the average corresponding ratio for the previous five years by 11·4. *Secondary syphilis* was the cause of 29 admissions, or 21·5 per 1,000, which is lower than the ratio in the previous year by 4·7, and than the quinquennial average rate by 3·7. *Gonorrhoea* caused only 28 admissions, or 20·8 per 1,000, being below the ratio in the previous year by 5·4, and below the average rate for five years by 5·6. Including all forms of venereal diseases, the total admission rate amounted to 69·8 per 1,000, a decline of 3·7 from the corresponding rate in the previous year, and below the quinquennial average rate by 20·7. The ratio of constant inefficiency on account of venereal diseases was 4·88 per 1,000, fractionally in excess of the rate in the previous year, but below the average rate by 1·71 per 1,000. It will be observed that there is not much venereal disease in these islands, and the Principal Medical Officer states that such as there is of a very mild variety. It is not easy to account for this, for there is no Contagious Disease Act in force, and no regular hospital, unless the workhouse for the poor.

No cases of *scurvy* occurred during the year; this, the Principal Medical Officer thinks, is satisfactory considering that vegetables and fruit are extremely scarce and very expensive; the troops, however, get potatoes, and, for a short time in the year, green vegetables.

Ten admissions are recorded for *alcoholism*, or 7·4 per 1,000; in the previous year there were 13 cases, or 11 per 1,000; one of the cases was delirium tremens. It is noted that the price of beer is high, and that, consequently, the soldiers drink a good deal of rum and indifferent spirit.

*Debility* also caused 10 admissions, or 7·4 per 1,000, which is a good deal below the rate in the previous year as well as below the average rate.

*Rheumatism*.—31 admissions are returned, equal to 23·0 per 1,000, which is below the last year's rate by 3·2, and below the average. One of the cases was rheumatic fever. Rheumatism is not so prevalent in Bermuda as would have been imagined considering the extremely damp climate, particularly during the months of July, August, and September. *Tubercular diseases* show three admissions, two being lung affections. It is remarked by the Principal Medical Officer that if cases of tubercular lung disease are at all advanced they do not do well in Bermuda, but run a rapid course; early invaliding is, therefore, advisable. There were a few admissions for other general diseases of this group, cases of anæmia, non-malignant growth, &c.

**LOCAL DISEASES.**—*Diseases of the Nervous System.* There were 8 admissions for nervous diseases, including 2 of mental affection. The admission ratio, 6·0 per 1,000, is but little more than half that in the previous year, and is below the average. Among the cases were two of inflammation of cerebral membranes, one fatal, and one of locomotor ataxy. There was also one death from hemiplegia. *Diseases of the eye* were at the rate of 15·6 per 1,000, being less prevalent than in the previous year. The cases were all mild. *Diseases of other organs of special senses* with a ratio of 13·4 per 1,000 show scarcely any difference in frequency; of the cases treated 13 were aural diseases, and 5

nasal affections. *Diseases of the circulatory system* caused 18 admissions, or 13·4 per 1,000, about the average rate, but much below the rate in the previous year. Two of the admissions were for valve disease of the heart, and of the remainder the majority were cases of palpitation or varicose veins. *Diseases of the respiratory system* gave an admission rate of 26·7 per 1,000, which is below the average as well as below the last year's rate. Most of the cases were bronchial affections, and there were 4 cases of pneumonia, and 5 of pleurisy. *Diseases of the digestive system* caused 148 admissions, or 110·0 per 1,000, lower than the corresponding rate for the previous year by 41·3, and somewhat below the average rate of five years. Six sevenths of the admissions were due either to affections of the mouth or throat, dyspepsia or diarrhoea, of the remainder six were cases of hepatic disease. *Diseases of the lymphatic system* caused an admission rate of 14·1 per 1,000, which scarcely differs from the corresponding rate in the previous year. None of the cases were of importance. There were 4 admissions for *diseases of the urinary system*, and among them one fatal case of nephritis. *Diseases of the generative system* gave a ratio of 17·8 per 1,000, a decline of 1·6. The chief cause of admission was orchitis, but none of the cases were important. *Diseases of the organs of locomotion* show a ratio of 5·9 per 1,000 as compared with 14·4 in the previous year. One case of note is recorded. A man received a punctured wound of the knee joint while bathing; after some days it was evident that suppuration had taken place in the joint; it was therefore opened under antiseptic conditions and drainage tubes inserted. The case did well for some time, but abscesses formed in the thigh and popliteal space due to periostitis of the lower end of the femur, and it was found necessary to amputate through the middle third of the thigh, which was performed with good results. *Diseases of the connective tissue* caused an admission rate of 42·4 per 1,000, an increase of 7·7. *Diseases of the skin* were at the ratio of 69·1, a considerable decline from the last year's rate, equal to 41·6, but is somewhat above the average. The bulk of the admissions were due to ulcers, boils, itch, &c.

**Poisons.**—A death from poisoning by hydrocyanic acid, a case of suicide, occurred; the probable cause of the act was family trouble. A verdict of temporary insanity was returned at the coroner's inquest.

**Injuries.**—The admissions for injury numbered 139, the ratio of prevalence being 103·3 per 1,000, which is less than that in the previous year by 16·8. There were a considerable number of minor injuries, such as contusions, wounds, and sprains; and two cases of fracture and one of dislocation did well. There were two deaths from accidental drowning.

**Invaliding.**—The number of men invalided home during the year was 12, being in the ratio of 8·91 per 1,000. This is a much lower rate than that of the preceding year, a decline of 16·68; it is also below the average rate for the previous 10 years by 7·78. Five men of the Artillery were invalided, 6 of the West Riding Regiment, and one man of the Medical Staff Corps. With regard to age, 8 men, or 9·00 per 1,000, were between 20 and 25 years of age; 2, or 11·90 per 1,000, in the next quinquennium, and 2, or 18·87 per 1,000, over that age. As to service in the Command, 2 men, or 4·09 per 1,000, were in their first year of residence, and 10 men, or 13·44 per 1,000, in their second year. The principal causes of invaliding were valve disease of the heart 3 cases, tubercular disease of the lungs 3, and affections of the stomach 2 cases. The number of men discharged the service as medically unfit was 10, equal to a ratio of 7·43 per 1,000, which is below the decennial average rate by 3·35, and below the previous year's rate by 15·39. The disabilities necessitating discharge were aural affections 2 cases, tubercular disease of the lungs 2 cases, heart disease 2, and rheumatism, disease of the nose, pneumonic phthisis, and inflammation of stomach one case respectively.

**Officers.**—The average strength of officers was 61, and there were 23 cases of illness, the rate of prevalence of sickness was, therefore, 377·0 per 1,000, a decline of 44·0 from the rate in the previous year. There were two cases of enteric fever, both of which did well. Two officers were invalided for debility, one after enteric fever, and the other after pneumonia.

**Women.**—The average strength was 90, and the cases of sickness 53. The admission rate, therefore, was 588·9 per 1,000, a good deal higher than the corresponding rate in the previous year by 267·0. The principal causes of

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admission were enteric fever 7 cases, dyspepsia 7, diarrhoea 6, abortion 4, and debility 4 cases. There was no death.

*Children.*—The average strength is returned as 161, and the number of cases of sickness as 68, making the admission ratio 422·4 per 1,000, an increase of 219·8 on the ratio in the previous year. There were 7 deaths, equal to 43·48 per 1,000, an increase of 17·34 in this comparison. Diarrhoea was the principal cause of sickness, 26 admissions and 5 deaths being returned. There was also one death from teething, and one from convulsions. One child was attacked with enteric fever, but recovered.

*Sanitary Conditions.*—The Principal Medical Officer reports that the accommodation in barracks and hospitals was sufficient during the year, and there was no overcrowding. During the epidemic of enteric fever marquees were used for some time at the hospital, and the Leicestershire Regiment was placed under canvas for six weeks, during which time the huts at Prospect camp were thoroughly scraped and whitewashed.

With the exception of the guard room at St. George's, the ventilation of all buildings was satisfactory. The facilities for ablution are sufficient. The rations are generally good and the cooking satisfactory. It has been recommended by a committee that white or khaki clothing, similar to that worn in India, should be taken into use in the hot weather.

With regard to improvements it is reported that at Prospect camp the drainage scheme has been completed. The amount of water available for flushing is not thought sufficient and a pumping engine is suggested. Special attention was paid to cleaning out the tanks, and steps were taken to disconnect all the underground tanks from each other. The Principal Medical Officer is of opinion that the use of underground tanks should be entirely discontinued, and that iron tanks placed above ground in direct communication with the collecting surfaces should only be used.

At Hamilton the drainage at the commissariat yard was examined and rearranged. The buildings are objectionable and are likely to be vacated, but meanwhile all minor defects were rectified as far as possible.

At Ireland Island the drainage of the Casemate barracks has been remodelled and improved. Certain defects in the latrine arrangements, lavatory, and tank were rectified. At St. George's increased floor and overhead ventilation was provided for the main guard room. There is now abundance of brackish water for sanitary purposes, also means of supplying the ablution room of the old block with fresh instead of brackish water; it is proposed to carry out this improvement in the other ablution rooms.

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## VI.—ON THE HEALTH OF THE TROOPS SERVING IN THE WEST INDIES.

### *Sickness and Mortality.*

#### I.—WHITE TROOPS.

The average strength of the troops serving in the Command during the year was 1,164. The force consisted of the 6th Battery, 1st Brigade, London Division, and the 3rd Battery, 1st Brigade, Welsh Division, Royal Artillery, the 1st Battalion East Yorkshire Regiment, until October, when it was relieved by the 2nd Battalion York and Lancaster Regiment from Halifax; detachments, Royal Engineers and Departmental Corps, and Garrison Staff. Drafts for the different corps arrived from England in October.

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The stations occupied by white troops were Barbados, Jamaica, and Trinidad; average strength 504, 478, and 178 respectively; only a few men being stationed at Honduras, Demerara, and the Bahamas.

The principal statistics of sickness and mortality during the year are given in the following table:—

| 1884.<br>Average Strength. | Admissions. | Deaths             |              |        | Invalids   |                        | Average<br>Sick. | daily | Ratio per 1,000 of Strength. |         |                        |                                    |                     |
|----------------------------|-------------|--------------------|--------------|--------|------------|------------------------|------------------|-------|------------------------------|---------|------------------------|------------------------------------|---------------------|
|                            |             | In the<br>Command. | Of Invalids. | Total. | Sent Home. | Finally<br>Discharged. |                  |       | Admissions.                  | Deaths. | Invalids<br>sent Home. | Invalids<br>finally<br>Discharged. | Constantly<br>Sick. |
| 1,164                      | 1,279       | 4                  | —            | 4      | 14         | 9                      | 64·67            |       | 1098·8                       | 3·44    | 12·03                  | 7·73                               | 55·55               |

Compared with corresponding ratios for the preceding year, a decline of 18·1 per 1,000 has occurred in the admission rate, one of 8·16 in the death rate, but there is a slight increase, 2·77, in the rate of constantly sick. In comparison with similar average ratios for the previous 10 years an increase of 145·9 per 1,000 is observed in admission rate, and one of 9·13 in the rate of constant inefficiency through sickness, though there is a decline, equal to 12·74 per 1,000, in the rate of mortality.

The average sick time to each soldier was 20·33 days, which is longer than in the previous year by rather over a day, and than the average period in the previous ten years by over three days. The average duration of each case of sickness was 18·50 days, longer by a day and a quarter than in the previous year, and than the decennial average period by three-quarters of a day.

In Abstract XXXIX. will be shown the more important of the statistics of sickness and mortality of different corps.

The highest ratio of admission in any corps was 1615·2 per 1,000 in the 6th Battery, 1st Brigade, London Division, Royal Artillery, quartered at Barbados, and the lowest of any corps with fair average strength 1071·4 in the 1st Battalion East Yorkshire Regiment at Jamaica. One death occurred in the 6th Battery, 1st Brigade, London Division, Royal Artillery, one in the 3rd Battery, 1st Brigade, Welsh Division, at Jamaica, one in the 2nd Battalion York and Lancaster Regiment at Barbados, and one death in the West India Regiment. The 6th Battery, 1st Brigade, London Division, also

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shows the highest ratio of constant inefficiency through sickness, 87·01 per 1,000, followed by the 1st Battalion East Yorkshire Regiment with 58·07. The 2nd Battalion York and Lancaster Regiment had a low rate, 47·48 per 1,000, but the regiment had only been two months in the Command, its statistics are not therefore of great value.

With regard to the influence of age on sickness and mortality, it is observed that the highest admission ratio, 1256·4 per 1,000, was among men between 20 and 25 years of age, the next ratio being 1078·5 among men between 25 and 30 years of age. In the previous year the highest ratio was between 20 and 25 years of age. There was no mortality under 20 years of age; two deaths equal to 2·86 per 1,000, among men between 20 and 25 years, one in the next quinquennium, equal to 3·57 per 1,000, and one over that age. Taking length of service in the Command, it is observed that the highest admission ratio, 1325·5 per 1,000, was among men in their third year of service, the next being 1246·0 among men in their first year of service; the ratio was lowest, 991·5, among men in their second year of service. There were 2 deaths, equal to 7·94 per 1,000, among men in their first year of service in the Command, and 2, equal to 11·63 per 1,000, among men in their third year.

The admissions, deaths, &c. according to the different groups and orders of diseases are shown in Abstract VII.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.—Eruptive fevers** show 4 admissions, all these were cases of dengue at Newcastle, Jamaica, and were the final cases of an epidemic which had lasted over the two concluding months of the previous year. *Enteric fever* caused 35 admissions and 1 death, being in the ratios of 30·1 and ·86 per 1,000 respectively. Compared with the corresponding ratios in the previous year, there is an increase of 17·6 in the admission rate, but a decrease of 5·39 in the death rate, and in comparison with corresponding ratios for the preceding five years there is an increase in admission rate equal to 24·5, and a decline in the mortality rate equal to 1·62 per 1,000. The mortality to attack was very slight as compared with the preceding year, when it was 50 per cent., or with the average rate of five years 44 per cent. The cases all occurred in Jamaica, and all but 2 at Newcastle (strength, 377). One or two single cases occurred in the earlier months of the year, but the epidemic outbreak was in July, August, and September, the cases in these months numbering 9, 11, and 8 respectively. With regard to causation it was not possible to determine it absolutely, though at the commencement the disturbing of old latrines during reconstruction was mentioned as a cause, and subsequently the spring tank water supply was thought to be liable to contamination. The medical officer in charge remarks that in the previous year the idea was expressed that most of the cases were contracted outside the station, but in the present year he was unable to trace anything to support this view; there was no enteric fever in the district, and there appears no doubt that the disease did arise in the station itself, though whether it was due to some local cause at present unknown, or to some general conditions acting throughout Jamaica, it was impossible to say. The medical officer further remarks that all the men attacked were young, but this point was not important as there are so few old soldiers. New arrivals did not suffer more than men who had been in the station over a year. The disease was characterised by copious eruption; relapses occurred in a proportion of the cases, hæmorrhage from the bowels in a few, pneumonia in two cases, and peritonitis in two. In each of the last-named cases no hopes were entertained, but they both recovered. *Simple continued fever* caused 93 admissions, equal to a ratio of 79·9 per 1,000, which is lower than the corresponding rate in the previous year by 29·8, and than the quinquennial average rate by 75·2 per 1,000. 40 of the admissions occurred at Newcastle, principally during the months of July, August, and September, at the same time when enteric fever was so prevalent. In a few of the cases great doubt existed as to whether they were not enteric fever. The medical officer was inclined to think that most of these fevers were modified types of enteric fever. Of the remaining cases 23 were at Trinidad, mostly mild, 20 at Barbados, and 10 at Up Park camp, one of which was fatal. *Dysentery* was the cause of 8 admissions, at the rate of 6·9 per 1,000, an increase of 5·1 on the rate in the previous year. Of the cases 6 occurred at Trinidad,

one at Barbados, and one at Up Park camp. One case of mumps was returned at Barbados. *West Indies Command.*

*Malarial fevers.*—Under this head 45 admissions are returned. The admission ratio, 38·6 per 1,000, is higher than that in the preceding year by 5·6, and than the quinquennial average rate by 12·2 per 1,000. Of the cases 24 were ague and 21 remittent fever. At Barbados these fevers were represented by a single case of ague; in Jamaica there were 6 cases of ague at Newcastle, 14 cases of ague and 2 of remittent fever at Port Royal, and 5 cases of remittent fever at Up Park camp, while at Trinidad there were one case of ague and 14 of remittent fever, some of the latter were very severe, but on deaths occurred.

In the next sub-group, venereal diseases, it is observed that *primary syphilis* caused 44 admissions, equal to a rate of 37·8 per 1,000 as compared with 25·9 in the previous year. If the sickness from simple venereal ulcers, 142 admissions and 10·26 constantly sick, be added, it is found that the admission ratio for primary venereal sores amounted to 159·8 per 1,000, being an increase of 68·8 on the corresponding rate in the previous year, and one of 74·9 on the average rate for the previous five years. *Secondary syphilis* also caused 44 admissions, or 37·8 per 1,000, this is higher than the rate in the previous year by 20·9, and than the quinquennial average rate by 9·1. *Gonorrhœa* was the cause of 171 admissions, the ratio 146·9 per 1,000 being above the average rate by 34·4, but just below the rate in the previous year. Including all forms of venereal disease, the admission ratio equalled 344·5 per 1,000, which is higher than the rate in the previous year by 88·5, and than the average rate of the preceding five years by 118·4. The total ratio of constant inefficiency on account of these diseases was 23·60 per 1,000, being higher than the last year's rate by 6·60, and than the quinquennial average rate by 7·60 per 1,000.

*Septic diseases* caused 3 admissions, two for erysipelas, and one for phagedæna. Under the head of *parasitic diseases* there were 5 admissions for different varieties of tænia. *Alcoholism* caused 16 admissions or 13·8 per 1,000 as compared with 15 admissions or 13·4 in the previous year. All the cases except one occurred at Barbados; this is said to be due to the cheapness of rum of bad quality so easily procured everywhere in the place. The admission rate for *debility*, 18·0 per 1,000, dependent on 21 admissions, is about twice as much as in the preceding year.

*Rheumatism* caused 29 admissions, the ratio, 24·9 per 1,000, being below the rate in the previous year by 13·4, and below the average rate by 10·3. There was no case of rheumatic fever, and more than half the cases of rheumatism occurred in Barbados. *Tubercular disease* of the lung caused two admissions; in the previous year there were four. Scrofula was the cause of one admission, and non-malignant new growths show six cases.

**LOCAL DISEASES.**—*Diseases of the Nervous System* caused 8 admissions, equal to a ratio of 6·9 per 1,000, which is lower than the previous year's rate by 5·6, and below the average rate. The cases comprised 2 of epilepsy, 2 of eclampsia, and the remainder neuralgia.

*Diseases of Organs of Special Senses* gave an admission ratio of 19·7 per 1,000 as compared with 57·0 in the previous year. The admissions for ophthalmic affections were 9 in number, or 7·7 per 1,000, and for aural diseases 14, or 12·0 per 1,000; these ratios are considerably below corresponding rates in the previous year as well as below average rates.

*Diseases of the Circulatory System.*—16 admissions are returned, of which 13 were cases of palpitation, 2 varicose veins, and 1 syncope; the admission ratio, 13·8 per 1,000, is rather below the average, but higher than in the previous year by 5·8.

*Diseases of the Respiratory System* caused 23 admissions, or 19·8 per 1,000, below the average rate to some extent, and greatly below the previous year's rate. 15 of the admissions were for bronchitis, and among the remainder were 3 for pleurisy, 3 for asthma, 1 for pneumonic phthisis, and 1 for pneumonia, with fatal result.

*Diseases of the Digestive System* caused 132 admissions, being in the ratio of 113·4 per 1,000, which is above the last year's rate by 13·5, and does not differ greatly from the average rate. The principal causes of admission were affections of the mouth and throat 41 cases, dyspepsia 40, and diarrhoea 23 cases. Hepatic diseases showed 8 admissions, 6 being cases of jaundice.

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*Diseases of the Lymphatic and Glandular System* caused an admission rate of 37·8 per 1,000, an increase of 4·8 on the previous year's rate.

*Urinary diseases* were represented by three admissions. *Diseases of the Generative System* had an admission rate of 136·6 per 1,000, greater than in the preceding year by 43·8. This increase is due to the greater prevalence of simple venereal ulcers, which account for nearly all the admissions, except a few cases of urethral stricture and orchitis.

*Diseases of the Organs of Locomotion* were at the rate of 5·2 per 1,000, and *diseases of connective tissue* at the rate of 38·7, both rather higher than in the previous year.

*Diseases of the Skin* caused 103 admissions, or 88·5 per 1,000, which is about the average rate. Beyond ulcers and boils the chief causes of admission were whitlow and ringworm.

*Injuries* were rather less frequent than in the preceding year, the admission ratio, 160·7 per 1,000, showing a decline of 13·3. The admissions were generally of an ordinary character, but there was one case of concussion of the brain and 3 cases of fracture. There was also one death from sunstroke.

*Invaliding.*—The number of men invalided home was 14, equal to a ratio of 12·03 per 1,000 of strength, which is lower than the corresponding rate in the previous year by 3·14, and than the average rate for the previous 10 years by 12·03. Of the men invalided 12 were from the East Yorkshire Regiment and 2 from the Artillery. 12 men, or 17·19 per 1,000, were between 20 and 25 years of age, and 2 men, or 7·14 per 1,000, were between 25 and 30 years, 2 men, or 7·77 per 1,000, were in their first year of service in the Command, 7 men, or 9·96 per 1,000, were in their second year, and 5 men, or 29·07 per 1,000, were in their third year of service. The causes of invaliding were constitutional syphilis, tubercular disease of the lung, hernia, and flat feet 2 cases each, and debility, rheumatism, epilepsy, palpitation, pneumonic phthisis, and synovitis one case respectively.

The number of men finally discharged the service as medically unfit was 9, equal to a ratio of 7·73 per 1,000, which is lower than the previous year's rate by 3·87, and than the decennial average rate by 6·54 per 1,000. The chief disabilities necessitating discharge were tubercular disease of the lung 2 cases, pneumonic phthisis 2 cases, and dementia, palpitation, hernia, recto vesical fistula, and flat foot one case respectively.

*Officers.*—The average strength was 102, and there were 55 cases of sickness and 2 deaths, and 3 officers were invalided home. The ratio of prevalence of sickness was 539·2 per 1,000, that of mortality 19·60, and that of invaliding 29·41. Compared with corresponding results in the previous year, there is a decline of 41·1 in the rate of prevalence, and one of 24·16 in the invaliding rate, but there is an increase of 1·74 in the death rate. The principal causes of sickness were fevers, simple continued fevers showing 14 cases, malarial diseases 5, and there was one case of enteric fever and one of measles. The deaths were one from remittent fever and one from malarial cachexia. The diseases necessitating invaliding were enteric fever, cystitis, and neuralgia one case respectively.

*Women.*—The average strength was 79, and there were 36 attacks of sickness and no death. The ratio of prevalence of sickness was 455·7 per 1,000 as compared with 371·4 in the preceding year. The principal causes of sickness were fevers, including 2 cases of enteric fever, 7 of simple continued fever, and one of remittent fever and debility.

*Children.*—The average strength was 122, the attacks of illness numbered 34 and the deaths 5, giving ratios of 278·7 and 40·98 per 1,000 respectively as compared with 214·3 and 26·78 per 1,000 in the previous year. Among the cases treated were bronchitis 7, simple continued fever 6, diarrhoea 3, whooping cough, diphtheria, dysentery, and infantile convulsions 2 cases respectively. The deaths were due to diphtheria, dysentery, debility, pneumonia, and jaundice one case respectively.

*Sanitary Conditions.*—The Senior Medical Officer shows that, generally speaking, the sanitary conditions under which the troops live are satisfactory. The accommodation in barracks is reported to have been good during the year, and the cubic space and superficial area were ample. Ventilation was satis-

factory and every attention given to cleanliness. The condition of the drainage is reported to have been generally satisfactory. With regard to water supply the report is to the effect that it is generally good and sufficient, but at Jamaica the source of supply, the Hope river, is said to be liable to contamination, but this matter was brought to the notice of the proper authorities. The quality of the rations and supplies was good. Preserved meat and mutton were issued to the troops once a week and were found to be good and wholesome. The means of cooking are ample, including various kinds of cooking ranges, besides American cooking stoves and boilers. Every facility is afforded for varying the diet. The clothing is reported as quite suitable to the climate, and the duties and employments to have been conducive to the health of the troops. Indoor as well as outdoor amusements were provided for the recreation of the men as far as possible. The following are the principal sanitary improvements which were carried out during the year:—At Barbados the non-commissioned officers' room at the canteen was enlarged, and manure pits constructed at Queen's House. At Saint Lucia new verandahs were built to the commanding Royal Engineers' quarters, and improvements effected both in drainage and water supply. At Cocoa Nut House two small buildings were acquired by the War Department, one of which has been fitted up as quarters for two officers and a mess room, and the other as a quarter for married soldiers.

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## II.—BLACK TROOPS.

The average strength of non-commissioned officers and men, exclusive of white sergeants, was 1,132. The troops in the Command consisted of the headquarters 2nd Battalion West India Regiment at Jamaica; this battalion left in November for Sierra Leone, and in December was replaced by the 1st Battalion of the Regiment from the West Coast of Africa. At Barbados, Demerara, and Nassau were detachments from the West India Regiment, and in the month of December a detachment was also sent to the island of Saint Lucia. In the month of May the troops (a detachment of the 2nd Battalion West India Regiment) were withdrawn from the Colony of British Honduras, and the Corps of Military Labourers, established in the West Indies in 1817, was disbanded at the end of September 1888. A Dépôt for the West India Regiment was formed at Up Park Camp, Jamaica, in October.

The average strength at Barbados was 289, at Jamaica 653, at the Bahamas 88, at Demerara 63, at Honduras 34, and at Trinidad 5.

The principal statistics of sickness and mortality among the black troops are given in the accompanying table:—

| 1888.<br>Average Strength. | Admissions. | Deaths          |              |        | Invalids   |                     | Average daily Sick. | Ratio per 1,000 of Strength. |         |                     |                              |                          |
|----------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|------------------------------|---------|---------------------|------------------------------|--------------------------|
|                            |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |                     | Admissions.                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Average Constantly Sick. |
| 1,132                      | 1,296       | 13              | —            | 13     | —          | 53                  | 81.18               | 1136.0                       | 11.46   | —                   | 45.93                        | 71.71                    |

Compared with corresponding results in the preceding year, the ratio of admission has declined by 196.8, that of constantly sick by 2.58, and that of death by .14 per 1,000; but compared with average similar ratios for the previous 10 years an increase of 22.8 per 1,000 has occurred in the rate of admission, and one of 11.15 in that of constant inefficiency through sickness, but the mortality ratio shows a decline of 3.26 per 1,000.



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The average sick time to each soldier was 26·25 days, which is shorter than in the previous year by rather less than a day, but longer than the average period in the preceding 10 years by 4·15 days. The average duration of each case of sickness was 23·10 days, this is longer than the corresponding period in the previous year by two days and three-quarters, and than the decennial average period by three days and a quarter.

Taking the sickness and mortality in the two battalions of the West India Regiment, it is found that the annual admission rate in the 1st Battalion was 1024·0 and in the second 1272·8 per 1,000; while the mortality rate in the former was 3·44 and in the latter 15·89 per 1,000. With regard to age the admission ratio of men under 20 years was 458·3 per 1,000, from 20 to 25 years of age 1384·2, in the next quinquennium 1318·5, and over that age 273·8. Mortality among men under 20 was 10·41, in the next five years of age 9·85, from 25 to 30 years 14·81, and over that age 12·73. As to service in the Command the admission ratio in the first year was 1207·7 per 1,000, in the second year 960·1, in the third year 1806·6, and over that time 859·4; mortality in the first year of service in the Command was 12·99, in the second year 6·13, in the third year 8·88, and over that time 16·39.

The admissions, deaths, &c. in the different groups and orders of diseases are given in Abstract VIII.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—*Continued fevers* caused 79 admissions, of which 3 were cases of enteric fever, which occurred at Jamaica, but there was no death; the admission rate for simple continued fever was 67·1 per 1,000, which is less than half the corresponding ratio in the preceding year, and is below the average rate of the preceding five years by 28·6. All the cases but 3, equal to 137·2 per 1,000, occurred at Up Park Camp, Jamaica. *Dysentery* caused 9 admissions as compared with 20 in the preceding year, most of the cases occurred in Jamaica. There was one death. The rest of the admissions in the first sub-group of diseases comprised a few cases of mumps and chicken-pox.

*Malarial Fevers.*—94 admissions are recorded, being in the ratio of admission of 83·0 per 1,000, which differs only fractionally from the quinquennial average rate but is lower than the previous year's rate by 7·5 per 1,000. Of the cases 88 were ague, and 6 remittent fever. Ague was most prevalent in Jamaica, especially in Port Royal, where 60 cases occurred. Remittent fever was also most frequent at Jamaica, 4 of the cases occurring at Up Park Camp, and one, fatal, at Port Royal. The Senior Medical Officer, Jamaica, attributes these fevers and also the cases of dysentery in great measure to the effects of impure water. There was one admission for remittent fever at Honduras, but at Barbados no case of malarial fever occurred.

*Septic diseases* were represented by two cases of erysipelas, which occurred at Up Park Camp, Jamaica.

*Primary syphilis* caused 67 admissions, equal to a ratio of 59·2 per 1,000, which is lower than the corresponding rate in the previous year by 14·7. Including the admissions for simple venereal ulcer, which numbered 161, the admission ratio for primary venereal sores is found to be 201·4 per 1,000, which, however, is lower than the similar ratio in the preceding year by 55·9, but is above the average rate for the previous five years by 33·4. *Secondary syphilis* was the cause of 63 admissions, the ratio being 55·6 per 1,000, this shows a considerable increase when compared with the rate in the preceding year, and with the average rate of five years, 29·1 and 34·0 per 1,000 respectively. The admissions for *gonorrhœa* were 175 in number, the ratio being 154·6 per 1,000, this is lower than in the preceding year by 44·6, and than the average rate by 5·4. The total admission rate for all forms of venereal disease amounted to 411·6 per 1,000, and although this is higher than the average ratio for the preceding five years by 62·0, it is below the corresponding rate in the previous year by 71·4. The average number constantly sick for all forms of venereal disease was 35·71, being in the ratio of 31·55 per 1,000, this is fractionally below the rate in the preceding year, but above the quinquennial average rate by 6·22.

*Rheumatism* was the cause of 74 admissions, which give a ratio of 65·4 per 1,000, slightly in excess of the ratio in the previous year, and also above the average. There was only one case of rheumatic fever.

*Tubercular disease* of the lung caused 5 admissions and 4 deaths, being in the ratios of 4·4 and 3·53 per 1,000 respectively. In the preceding year this affection caused 8 admissions and 2 deaths. *West Indies Command.*

**LOCAL DISEASES.**—*Diseases of the Nervous System.*—11 admissions are recorded, equal to a ratio of 9·7 per 1,000, which is lower than the corresponding rate in the previous year and below the average. Among the cases treated were two of mental affection and one of paralysis. Of the remainder neuralgia was the principal cause of admission.

*Diseases of Organs of Special Senses.*—The admission ratio for these affections equalled 25·7 per 1,000, a decline of 8·3 from the previous year's rate, but above the average rate. The total number of admissions was 29, of these 26 were ophthalmic affections, chiefly conjunctivitis, and the remainder aural diseases.

*Diseases of the Circulatory System.*—28 cases are returned, the admission rate being 24·7 per 1,000, an increase of 3·9 on the rate in the preceding year, and a good deal above the average rate. More than three fourths of the cases were palpitation, and there were three cases of valve disease, and one, fatal, of dilatation of the heart.

*Diseases of the Respiratory System* caused 55 admissions and 3 deaths. The admission ratio of 48·6 per 1,000 is rather below the previous year's rate, and below the average. 29 of the cases were bronchial affections, and among the remaining cases were 12 of pneumonia with 2 deaths, and 6 of pleurisy with one death.

*Diseases of the Digestive System* were less frequent than in the preceding year, the admission ratio, 49·5 per 1,000, being below the rate in the previous year by 24·4, and also good deal below the average rate. The principal causes of admission were affections of the mouth and throat, dyspepsia and diarrhoea. There were three cases of hepatic disease, including two of abscess of the liver, from which also two deaths are returned.

*Diseases of the Lymphatic and Glandular System* caused an admission rate of 51·2 per 1,000, which differs but slightly from that in the preceding year; *diseases of the generative system* had a high ratio of admission, 169·6 per 1,000, dependent chiefly on simple venereal ulcer, but yet were less frequent than in the previous year by 46·2; *diseases of the organs of locomotion* with an admission rate of 15·9 per 1,000 show scarcely any change; but *diseases of the connective tissue*, admission rate 32·7 per 1,000, were somewhat more frequent; *diseases of the skin* also were more prevalent, the admission rate, 77·7 per 1,000, showing an increase of 27·1 over the last year's rate, and being also above the average.

*Injuries.*—The admission rate was 91·0 per 1,000, rather in excess of the previous year. Under the head of general injury two cases of heat apoplexy are returned, and one of sunstroke, which was fatal. Local injuries were all of an ordinary character and need no special allusion.

*Invaliding.*—52 men were discharged the service by invaliding, being in the ratio of 45·93 per 1,000 of strength. Comparing this ratio with that in the previous year, a decline of 20·46 is observed, but comparing it with an average rate for the preceding 10 years there is an increase of 7·34. The principal causes of invaliding were cardiac affections 8 cases, urethral stricture 6 cases, constitutional syphilis 4, scrofula 4, and diseases of the organs of locomotion 4 cases.

*Women and Children.*—The average strength of women was 50; among them were only four cases of sickness, two of which were abortion. The average strength of children was 60, and among these only 3 cases of sickness are returned, two of bronchitis, and one of pneumonia, but both cases of bronchitis were fatal.

*Sanitary Conditions.*—The Senior Medical Officer reports that the health of the black troops was good throughout the year. The troops occupied the same barracks as hitherto, and wherever any overcrowding existed the accommodation was supplemented by tents. Ventilation was good, and the drainage reported to be satisfactory. At Saint Lucia a house was acquired to accommodate the detachment of black troops recently sent to occupy that station. The hospital accommodation was generally reported to be satisfactory. The water

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Command.*

supply was good and sufficient, except at Up Park Camp, where the source is said to be liable to contamination, this is under consideration. Rations were good and sufficient, and the means of cooking ample and every facility afforded for varying the diet. The clothing of the men was of a suitable character. The duties were of an ordinary character. Recreations and amusements both out and in door were provided for the men.

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## VII.—ON THE HEALTH OF THE TROOPS SERVING IN WESTERN AFRICA.

### *Sickness and Mortality.*

#### I.—WHITE TROOPS.

The white troops consisted of the European non-commissioned officers of the West India Regiment and of the officers serving in the Command. The average strength of the former was 10; there were 18 admissions into hospital, no deaths, and 5 men were invalided home. In the previous year in a similar strength there were 13 admissions and no mortality. The admissions comprised 8 for remittent fever, 2 for ague, 5 for debility, and one for tænia solium, ulcer, and rheumatism respectively. Invaliding was due to debility in 4 cases, and to remittent fever in one case.

The average strength of officers was 26, and there were 50 admissions, being in the ratio of 1923·0 per 1,000 as compared with 1413·7 in the previous year. There was one death from remittent fever, and 10 officers were invalided, 4 on account of remittent fever, 3 on account of debility, and one on account of hæmoptysis, dyspepsia, and jaundice respectively.

#### II.—BLACK TROOPS.

The average strength was 502. Of these 328 were at Sierra Leone, and 174 at Cape Coast Castle. At Sierra Leone the headquarters of the 1st Battalion West India Regiment was replaced in November by the headquarters of the 2nd Battalion, and at Cape Coast Castle there was a detachment of the 1st Battalion throughout the year.

The following table shows the most important of the statistics of sickness and mortality in each division of the Command as well as in the whole Command:—

| 1888.             | Average Strength. | Admissions. | Deaths. | Invalids            |                     | Average daily Spt. | Ratio per 1,000 of Strength. |         |                              |                              |                  |
|-------------------|-------------------|-------------|---------|---------------------|---------------------|--------------------|------------------------------|---------|------------------------------|------------------------------|------------------|
|                   |                   |             |         | Sent to West India. | Finally Discharged. |                    | Admissions.                  | Deaths. | Invalids sent to West India. | Invalids finally Discharged. | Constantly Sick. |
| Sierra Leone      | 328               | 389         | 2       | —                   | —                   | 25·46              | 1186·0                       | 6·00    | —                            | —                            | 77·68            |
| Cape Coast Castle | 174               | 237         | 3       | —                   | —                   | 14·25              | 1363·1                       | 17·24   | —                            | —                            | 81·90            |
| Command           | 502               | 626         | 5       | —                   | —                   | 30·71              | 1247·0                       | 9·28    | —                            | —                            | 79·10            |

Compared with corresponding ratios in the preceding year, the admission and constantly sick rates at Sierra Leone increased by 237·7 and 19·82 per

*West Africa.* 1,000 respectively, but the death rate decreased by 17·16, while at Cape Coast Castle the admission rate declined by 200·7, and the mortality rate by 10·08, but the ratio of constant inefficiency through sickness increased by 9·66 per 1,000.

Taking the Command as a whole, the admission ratio is higher than in the preceding year by 101·4, but lower than the similar average rate for the preceding 10 years by 335·2 per 1,000; the death rate is below that of the previous year by 14·60, and below the average decennial rate by 9·96, and the constantly sick rate is higher in both these comparisons by 16·66 and 12·02 respectively. The average sick time to each soldier was 28·95 days, being longer than in the previous year by rather over six days, and than the decennial average period by four and a half days. The average duration of each case of sickness was 23·22 days, which was longer than the time in the previous year by 3·33 days, and than the similar period for the preceding 10 years by 7·75 days.

A small detachment consisting of one officer and 29 men was stationed at Robari, an outpost in the Yonnie country, about 50 miles from Sierra Leone. The men were accommodated in a block house, and the officer occupied a native hut. The detachment was relieved every three months, and the medical officer in charge reports that the health of the men was good, and that only slight cases of ague occurred, which did not require hospital treatment.

The admissions, deaths, &c. in the different groups and orders of diseases are shown in Abstract IX.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—A single case of chicken-pox and 12 of dysentery are all the admissions in the first sub-group of diseases. The admission ratio for the latter disease was 23·9 per 1,000 as compared with 36·8 in the preceding year. All the cases occurred at Cape Coast Castle, and it is said that they were probably due to impure water.

*Malarial fevers* caused 98 admissions and one death. The admission ratio, 195·2 per 1,000, declined from the corresponding rate in the previous year by as much as 125·8, and is still more considerably below the average rate for the preceding five years. The Senior Medical Officer, Surgeon-Major R. C. Eaton, thinks that this decrease is principally attributable to the men having become more acclimatized. There were in all 27 cases of ague, 17 at Sierra Leone and 10 at Cape Coast Castle, and 71 cases of remittent fever, 25 at Sierra Leone and 46 at Cape Coast Castle; there was one death from remittent fever at the latter place.

In the next sub-group, venereal diseases, *primary syphilis* shows 31 admissions, equal to a ratio of 61·8 per 1,000, as compared with 43·9 in the preceding year. Adding the admissions for simple venereal ulcer, 55, the ratio of admission for primary venereal sores amounted to 171·3 per 1,000, which is above the corresponding rate for the previous year by 97·6, and above the average ratio for the preceding five years by 76·7. *Secondary syphilis* caused 13 admissions, equal to 25·9 per 1,000, which exceeds the previous year's rate by 18·9, and is above the average rate by 10·5. The admissions for *gonorrhœa* were 72 in number, which give a ratio of 143·4 per 1,000, which is higher than the corresponding rate in the previous year, but below the average rate of the preceding five years by 25·6. Including all forms of venereal diseases, the admission rate equals 340·6 per 1,000; this is above the ratio in 1887 by 137·1, and above the quinquennial average ratio by 61·6. The number of men constantly ineffective on account of these diseases, 14·78, equals a ratio of 29·44 per 1,000, an increase on the last year's rate of 10·44, and one of 10·54 or the average rate.

Among the remaining admissions for general diseases were 33 for *rheumatism*, the ratio of admission being 65·7 per 1,000, which is higher than the rate in the previous year by 7·8. There was no case of rheumatic fever. *Tubercular disease* of the lung caused 4 admissions and 2 deaths; in the previous year there were 3 admissions and 2 deaths.

**LOCAL DISEASES.**—*Diseases of the Nervous System* caused 9 admissions and one death. The admission rate was 17·9 per 1,000, being above the last

year's rate by 10·8. Among the cases were 2 of mental disease, 3 of paralysis, and one of inflammation of the membranes of the brain, which proved fatal. *Ophthalmic* affections gave a ratio of 17·9 per 1,000, being rather less in frequency than in the previous year. *Diseases of the Circulatory System* show only 7 admissions, and of these 6 were cases of palpitation, the other being valve disease of the heart. *Respiratory diseases* were less frequent, the admission rate, 23·9 per 1,000, having fallen from 49·1. With the exception of a case of pneumonia and one of hæmoptysis, all the admissions were for bronchitis. *Diseases of the Digestive System* caused 27 admissions, the ratio being 53·8 per 1,000. The last year's rate was 45·6. The admissions were for various causes, diarrhoea and dyspepsia being the most frequent. *Diseases of the Lymphatic and Glandular System* gave an admission rate, 57·8 per 1,000, almost identical with that of the previous year. *Diseases of the Urinary System* caused 11 admissions, 6 of which were cases of nephritis, one being fatal. *Diseases of the Generative System* gave a high admission rate, 129·5 per 1,000, principally dependent on simple venereal sores. *Diseases of the connective tissue* with an admission rate of 31·9 per 1,000 scarcely differed in frequency from the previous year. *Cutaneous diseases*, on the other hand, show a marked increase, the admission ratio having risen from 129·8 to 235·1 per 1,000; this is due principally to the fact that there were a great number of admissions for ulcers of the legs, more than half the total number, which were contracted in the bush during the Yonnie expedition.

*Injuries* caused 37 admissions, equal to 73·7 per 1,000, as compared with 75·4 in the preceding year. Wounds were the chief causes of admission; among them there were three of gunshot wound received in action during the above-mentioned expedition.

*Invaliding*.—No invaliding of men to the West Indies is shown in the returns for the year under report, due to the fact that the regiment, which had been two and half years on the coast, was itself relieved and returned to the West Indies.

*Women and Children*.—The average strength of women was 35, and the number of admissions was 12, equal to a ratio of 342·8 per 1,000, which shows a considerable improvement in the health of women as compared with the previous year. The principal cause of sickness was remittent fever. Among 37 children there were only 5 cases of sickness; the admission rate, 135·1 per 1,000, shows a considerable decline. One death occurred from debility.

*Sanitary conditions*.—The Senior Medical Officer, remarking on the insanitary condition of Freetown, the capital of Sierra Leone, points out that, from its situation at the foot of the hills, from the saturation of its soil from innumerable cesspits, and from its total want of an efficient system of sanitation, it is, as might be expected, the home of paroxysmal fevers from ordinary ague to the worst forms of remittent fever. Tower Hill on which the barracks are built slopes gradually up from Freetown to a height of 300 feet above the sea, but this elevation is not sufficient to afford protection from malaria, and the proximity of Freetown renders the troops liable to suffer from any diseases which may be prevalent among the civil population. The barracks are very old and defective in original construction, and the cubic and superficial measurements allowed to each man are too limited for a tropical climate. There are many satisfactory sites for barracks in the neighbouring hills, and the authorities have under consideration the advisability of locating a certain portion of the troops in a more elevated position. In the present barracks certain alterations and improvements are about being carried out, the surface drainage around the barracks has been repaired and extended, the latrine accommodation has been enlarged, and several minor improvements effected.

It is stated that the water supply is from a mountain stream brought in by means of pipes, and is of good quality and sufficient in quantity. The rations were not entirely satisfactory, as it is said that the meat was poor in quality, but it was the best that could be procured at the station; the bread was fairly good.

The Senior Medical Officer thinks the jacket worn by the troops too tight fitting for a tropical climate, and that a loose Norfolk jacket and knickerbockers of khaki would be more suitable as a working dress. He recommends

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*West Africa.* also that the men should be provided with ankle boots to wear with their leggings, as shoes with leggings are apt to chafe the ankles.

The Senior Medical Officer at Cape Coast Castle reports that marked improvement in sanitary matters took place during the year, due to the colonial authorities paying particular attention to hygienic rules; but it is, however, almost impossible to arrive at entirely satisfactory results as regards sanitation in a native community.

The sources of water supply for the troops are, for drinking purposes, rain water stored in tanks within the Castle, and for ablutionary purposes water from native wells. There is also a tank which has been handed over to the military authorities by the Colonial Government, which contains a supply of rain water. It is, however, not of very good quality, and is only to be used in case of emergency. In addition to the above, condensed water can always be obtained.

The barracks in the Castle and the huts on Connor's Hill appear to be generally in good condition; also the hospital, which is a private house rented by Government for that purpose. The meat ration, here also, is said to be of poor quality, and as abundance of fresh fish can be obtained it has been suggested that this should be issued occasionally.

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# VIII.—ON THE HEALTH OF THE TROOPS SERVING IN SOUTH AFRICA AND AT ST. HELENA.

## Sickness and Mortality.

The average strength of the warrant officers, non-commissioned officers, and men serving in the Command during the year was 3,717, and of these 239 were stationed at St. Helena. The following corps composed the force:— *South Africa and St. Helena.*

The 6th Inniskilling Dragoons, four batteries Royal Artillery, one of which arrived from Hong Kong in February, a company Royal Engineers, the 1st Battalion Royal Scots, the 1st Battalion North Staffordshire Regiment, the 1st Battalion Royal Inniskilling Fusiliers, until November, when it was relieved by the 1st Battalion East Yorkshire Regiment and the 3rd Battalion Rifle Brigade, which arrived from Egypt at the end of August; also detachments, Departmental Corps and Garrison Staff.

In the following table the more important statistics of sickness and mortality in the whole Command are given, and those for South Africa and St. Helena shown separately:—

| 1888.                | Average Strength. | Admissions. | Deaths.         |              |        | Invalids   |                     |
|----------------------|-------------------|-------------|-----------------|--------------|--------|------------|---------------------|
|                      |                   |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |
| South Africa . . . . | 3,478             | 3,111       | 24              | 4            | 28     | 136        | 59                  |
| St. Helena . . . .   | 239               | 166         | 1               | —            | 1      | 5          | 1                   |
| Total . . . .        | 3,717             | 3,277       | 25              | 4            | 29     | 151        | 60                  |

(continued.)

| 1888.                | Average daily Sick. | Ratio per 1,000 of Strength. |         |                     |                              |                  |
|----------------------|---------------------|------------------------------|---------|---------------------|------------------------------|------------------|
|                      |                     | Admissions.                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| South Africa . . . . | 207.86              | 894.5                        | 8.05    | 36.23               | 16.96                        | 59.76            |
| St. Helena . . . .   | 9.73                | 694.5                        | 4.18    | 20.92               | 4.13                         | 40.67            |
| Total . . . .        | 217.88              | 861.6                        | 7.80    | 36.24               | 16.14                        | 56.53            |

Compared with corresponding ratios for the preceding year the admission ratio for all the troops in the Command has declined by 5.8, the death rate by



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'22 and the constantly sick rate by '41 per 1,000; but compared with average ratios for the preceding 10 years the admission ratio as increased by 47·8 per 1,000, and the ratio of constant inefficiency through sickness by 6·52; the death rate, however, is still considerably lower than the decennial average rate, which is high, on account of the casualties due to active service some years back. The average sick time to each soldier was 21·42 days, almost identical with the corresponding period in the preceding year, but longer than the similar average period in the preceding 10 years by two days and a half. The average duration of each case of sickness was 24·30 days. This also scarcely differs from the corresponding period in the previous year, but is longer than the average period by one day and a half.

Taking the ratios for South Africa only, and comparing them with the corresponding ratios for the preceding year, it is observed that in none is there more than a small fractional difference; and taking the ratios for St. Helena it is found that each of them show a decrease in a similar comparison.

In Abstract XXXIX. is a table which shows the comparative statistics of sickness and mortality among the troops quartered in South Africa. The highest annual ratios of admission and constantly sick, 1693·1 and 123·17 per 1,000 respectively, were in the 1st Battalion Royal Inniskilling Fusiliers, quartered at Cape Town for 11 months; the next ratios were 1254·7 and 88·96 per 1,000 respectively in No. 8 Battery, 1st Brigade, Western Division, Royal Artillery, also quartered at Cape Town. The 1st Battalion East Yorkshire Regiment follows with an annual admission rate of 1178·9, but this corps had been only two months in the Command. The lowest annual admission and constantly sick ratios were 626·4 and 29·32 per 1,000 respectively in the 3rd Battalion Rifle Brigade, quartered at Wynberg on arrival in the Command. The 1st Battalion North Staffordshire Regiment and the 6th Inniskilling Dragoons stationed at Pietermaritzburg and Etshowe also gave low admission rates, 677·6 and 715·7 per 1,000 respectively. With regard to mortality the highest ratio was 28·30 per 1,000, in the 8th Battery, 1st Brigade, Western Division, Royal Artillery, the next was 21·13 in the 6th Inniskilling Dragoons. In the Inniskilling Fusiliers there was no mortality, as well as in the East Yorkshire Regiment and the Royal Engineers, and in the 1st Battalion Royal Scots at Wynberg and Etshowe the ratio was only 3·69, and in the 3rd Battalion Rifle Brigade the rate was 3·77 per 1,000.

Calculations as to the amount of sickness according to age show that, as in the previous year, the highest admission rate was among men between 20 and 25 years of age, and amounted to 1026·5 per 1,000, between 25 and 30 years of age it was 844·7, and it further declined in the next quinquennium and over that age. Mortality also was highest among men between 20 and 25 years of age, the ratio being 8·07 per 1,000, among men between 25 and 30 years the rate fell to 4·57, and among those between 30 and 35 years to 3·66; over that age the rates increased, due to 3 deaths in a small strength. With regard to service in the Command it is observed that the highest admission ratio was among men in their first year of service, 1162·0 per 1,000; among men in their second year of service it was 700·5, rising to 998·2 among men in their third year of service, and falling again to 813·5 in men in their fourth year of service, and to 654·6 among men over that time. In the preceding year the highest sick rate was among men in their third year of service. The highest mortality rate was 19·50 per 1,000 among men over four years' service in the Command, the next 8·74 among men in their third year of service, 5·61 in the fourth year, 4·46 in the second year, and 4·21 in the first year of service.

In Abstract No. X. will be found the principal statistics of sickness and mortality in the different groups and orders of diseases.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—Five admissions are recorded for *eruptive fevers*, 4 of them were for measles, and the fifth for scarlet fever. *Enteric fever* caused 10 admissions and 2 deaths, being in the ratios of 2·7 and '54 per 1,000 respectively. The admission ratio is higher than that in the preceding year by 1·3, but lower than the corresponding average rate by 4·9, while the mortality rate is almost identical with that in the previous year, but above the average by 1·07 per 1,000. The percentage of mortality to attack, 20, is half that in the preceding year, but

about the average rate for the preceding five years. Five of the cases and one death occurred in Cape Colony, and the rest in Natal or Zululand. Of the former, two cases occurred at Cape Town, and were admitted from the main barracks, but it is stated that they were probably contracted in the town where the sanitation is very defective; the other three cases occurred in Simonstown and one proved fatal. Of the remaining cases, four occurred at Etshowe and one died, it is said that three of them were probably contracted elsewhere; and there was one case at Pietermaritzburg, which recovered. *Simple continued fever* caused 75 admissions, and one death is recorded from this disease. The admission ratio, 20·2 per 1,000, is higher than the previous year's rate by 7·6, though a good deal below the quinquennial average rate. Of the cases, 29 occurred at Etshowe, 14 at Pietermaritzburg, 25 at Cape Town, and the remainder at various stations. The death recorded from this disease occurred at Etshowe.

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Helena.

*Dysentery*.—30 admissions are recorded, equal to a ratio of 8·1 per 1,000, which is an increase on the rate in the previous year. The cases were 21 at Etshowe, 6 at Pietermaritzburg, 2 at St. Helena, and one at Cape Town.

*Malarial Fevers*.—The number of admissions was 35, the ratio being 9·4 per 1,000, which is higher than the corresponding rate in the previous year by 1·7, but is a good deal below the average rate of the preceding five years. 29 of the cases were *ague*, and the remainder *remittent fever*, from which there was one death. Of the *ague* cases, 16 occurred at Cape Town and 9 at Etshowe, and 5 of the *remittent fever* cases occurred at Etshowe. Malarial fevers are said not to be common in South Africa, and occur in many cases in men who have previously suffered in other stations.

*Septic diseases*.—Under this head 10 admissions are returned, all for *erysipelas*. The admission ratio, 2·7 per 1,000, scarcely differs from that in the preceding year.

In the next sub-group, venereal diseases, there was a good deal of sickness. There were 276 admissions for *primary syphilis*, being in the ratio of 74·3 per 1,000, which is only about half the ratio in the preceding year. Including simple venereal ulcers, the admission ratio for primary venereal sores amounted to 135·4 per 1,000, which is lower than the corresponding ratio in the preceding year by 69·7, and than the average ratio for the preceding five years by 3·6. The admissions for *secondary syphilis* are recorded as 351, being in the ratio of 94·4 per 1,000, which is an increase of 38·8 on the last year's ratio, and one of 53·9 on the average ratio. Two deaths are returned from constitutional syphilis. *Gonorrhoea* caused 410 admissions, equal to a ratio of 110·8 per 1,000, being slightly above the rate in the previous year and above the average rate by 5·7 and 12·2 respectively. The total admission ratio, including all forms of venereal disease, was 340·1 per 1,000, which is lower than the corresponding rate in the preceding year by 25·2, but above the average rate for the previous five years by 62·5. The ratio of constant inefficiency on account of venereal disease was 24·72 per 1,000, which is above the quinquennial average ratio by 4·18, but is below the similar ratio for the preceding year by 2·22 per 1,000.

The Principal Medical Officer, Deputy Surgeon General J. G. Faught, speaks of the introduction of a Contagious Diseases Act in the seaport towns of Cape Colony, and states that though it had been but a short time in operation its effects were making themselves felt in a reduction of the number of admissions and the severity of the cases. He remarks that no attempt has been made to carry a similar Act into force in Natal, as considerable difficulties are in the way owing to it being under a different form of government.

*Parasitic diseases* are represented by 6 cases of *tænia solium*. *Alcoholism* shows 10 admissions (including one for *delirium tremens*) as compared with 11 in the preceding year. *Debility* caused 50 admissions, equal to a ratio of 13·5 per 1,000, which differs only fractionally from the corresponding rate in the previous year.

*Rheumatism*.—Under this head 225 admissions are recorded, being in the ratio of 60·5 per 1,000, which is higher than the similar rate in the previous year by 5·2, and a good deal above the average rate. Among the cases treated were five of *rheumatic fever*, but all did well. The admissions for different forms of *rheumatism* in Cape Town numbered 65, in Wynberg 29, in Etshowe 58, and in Pietermaritzburg 58.

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Helena.

**Tubercular diseases.**—9 admissions and 5 deaths are recorded. Two of the deaths occurred at Pietermaritzburg from general tuberculosis, one from tubercular disease of the lung at Cape Town, one at St. Helena, and one, of an invalid after having left the Command, from the same disease. The Principal Medical Officer remarks that it does not appear to be well understood that tubercular disease of the lung is, if anything, more rapidly fatal on the sea-board in South Africa than at home, and people with this affection sent to the Cape should receive instructions not to remain on the sea-coast. A proposal to form a sanitarium at Barkly West for soldiers suffering from this disease has, the Principal Medical Officer regrets, fallen through.

The remaining admissions for general diseases were 21 in number, chiefly cases of papilloma, scrofula, and anæmia, requiring no special allusion.

**LOCAL DISEASES.**—*Diseases of the Nervous System* caused 52 admissions and 3 deaths (including two of invalids), being in the ratios of 14·0 and ·81 per 1,000 respectively. The admission ratio is a good deal above the average of the five previous years, and is more than twice the corresponding rate in the preceding year. Among the admissions were 6 for mental disease; of the remainder more than half were for neuralgia, and there were 11 for paralysis and 6 for epilepsy. The deaths were caused by paralysis in two instances and by apoplexy in one. *Diseases of the Organs of Special Senses* gave an admission ratio of 31·7 per 1,000, which is above the average as well as above the last year's rate. Of the total number of admissions 83 were ophthalmic affections, chiefly conjunctivitis and iritis, 34 were aural diseases, and there was one case of epistaxis. *Diseases of the Circulatory System* caused 47 admissions, or 12·6 per 1,000 which is lower than the rate in the previous year by 2, but differs only fractionally from the average rate. Nearly two thirds of the admissions were for palpitation, and there were 11 cases of valvular disease of the heart, and 7 of diseases of veins. *Diseases of the Respiratory System* show 82 admissions and 4 deaths, including that of an invalid. The admission ratio, 22·1 per 1,000, was in excess of that in the preceding year by 4·1, but was slightly below the average rate. Of the admissions 53, or nearly two thirds, were cases of bronchial affection, and among the remainder were 15 cases of pneumonic phthisis, 8 of pneumonia, and 3 of pleurisy. Of the deaths, 2 were due to pneumonia and 2 to pneumonic phthisis. *Diseases of the Digestive System* caused 270 admissions and 3 deaths, the respective ratios being 72·6 and ·81 per 1,000. The admission ratio is lower than that in the previous year by 5·3, and also below the average rate. The admissions comprised 97 for affections of the mouth and throat, 61 for dyspepsia, 40 for hepatic affections, 30 for diarrhoea, &c. The deaths were two from abscess of the liver and one from enteritis. The admissions for *diseases of the Lymphatic and Glandular system* numbered 201, or 54·1 per 1,000, which is a decrease of 11·8 from the last year's rate. *Diseases of the Urinary System* were less frequent than in the previous year, the ratio of admission, 3·8 per 1,000, showing a decline of 2·5. Half the admissions were cases of hæmaturia, and there were among the remainder two cases of Bright's disease, one of which was fatal. *Diseases of the Generative System* show a high ratio, 81·5 per 1,000, as compared with 75·4 in the preceding year. Over two thirds of the admissions were for simple venereal ulcer, and of the remainder orchitis was the prevailing disease. *Diseases of the Organs of Locomotion* gave a ratio of 8·6, and *diseases of the Connective Tissue* one of 23·4 per 1,000, the former being slightly above and the latter rather below the corresponding rate in the previous year. *Diseases of the Skin* with a ratio of 54·9 per 1,000 were rather more prevalent than in the preceding year, and above the average. The cases were of ordinary character.

**Injuries.**—335 admissions and 7 deaths are returned, the ratios being 90·1 and 1·88 per 1,000 respectively. The admission rate shows a decrease of 3·6 from that in the previous year. Under the head of general injuries are shown 8 admissions for lightning stroke, one for multiple injury, and one for sun-stroke. There were two deaths from multiple injury, one from lightning stroke, and one from drowning. Among local injuries the most frequent were contusions, wounds, and sprains, causing as many as 274 admissions, the remaining 51 included 18 cases of fracture of various kinds, 7 of burns or scalds, 6 of gunshot wounds and others. There was one death from gunshot wound, suicidal, a sergeant 6th Inniskilling Dragoons at Pietermaritzburg shot himself

through the heart while in a state of temporary insanity; no motive could be discovered. There were also two deaths from injuries received in action, both cases of gunshot wound of abdomen.

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**Invaliding.**—131 men were invalided during the year, equal to a ratio of 35·24 per 1,000, which is higher than the corresponding ratio in the preceding year by 9·17, but lower than the average rate of the previous ten years by 23·72. The highest invaliding ratio in any individual corps was 87·50 per 1,000, in H. Battery, 4th Brigade Royal Artillery, quartered partly at Pietermaritzburg and partly at Etshowe; the next ratio was 56·60 in No. 8 Battery, 1st Brigade, Western Division. Royal Artillery, quartered at Cape Town, followed by 50·19 in the Royal Inniskilling Fusiliers. In the East Yorkshire Regiment there was no invaliding, and in the 3rd Battalion Rifle Brigade but very little, but these corps had only recently arrived in the Command; the ratio of invaliding in the 6th Inniskilling Dragoons was low, 21·13, and also that in the battery of Artillery quartered at St. Helena 26·78 per 1,000. With regard to the ages of the men it is calculated that 12·76 per 1,000 of strength under 20 years of age were invalided during the year, 42·65 per 1,000 between 20 and 25 years, 36·53 per 1,000 among men between 25 and 30 years, falling to 7·32 in the next quinquennium, and then again rising. Taking service in the Command, the invaliding ratio among men in their first year of service is found to have been 15·77 per 1,000, in the second year 33·86, in the third year 24·47, in the fourth year 44·88, and over that time 97·49 per 1,000. The principal causes of invaliding were secondary syphilis 17 cases, or 4·57 per 1,000, circulatory affections 24 cases, or 6·46 per 1,000, chiefly cases of palpitation or valve disease, rheumatism 12 cases, or 3·23 per 1,000, tubercle of lung 9 cases, pneumonic phthisis 8 cases, &c. The number of men finally discharged by invaliding was 60, equal to a ratio of 16·14 per 1,000, which is below the decennial average rate by 6·05, but above the ratio in the preceding year by 2·39. The principal disabilities necessitating discharge were affections of the circulatory system 10 cases, or 2·69 per 1,000, debility 6 cases, or 1·61 per 1,000, rheumatism, nervous diseases, and tubercle 5 cases each, and constitutional syphilis, ophthalmic disease, respiratory affection and injuries 4 cases respectively, &c.

**Officers.**—The average strength was 153, and there were 70 attacks of illness and 3 deaths, being in the ratios of 457·5 and 19·61 per 1,000 respectively. Compared with the previous year's return the ratio of prevalence of sickness shows an increase of 9·2. The principal causes of sickness were fevers (including two cases of enteric fever), digestive disorders, and injuries. The causes of death were accidental drowning, gunshot wound of head received in action, and syncope one case respectively. Three officers were invalided, one on account of malarial fever, one for dyspepsia, and one for stricture of the œsophagus.

**Women.**—The average strength was 208, and there were 77 cases of sickness and 2 deaths, being in the ratios of 370·2 and 9·62 per 1,000 as compared with 365·0 and 5·00 per 1,000 respectively. The principal causes of illness were debility, digestive disorders, and affections of the generative system. The deaths were due to pneumonic phthisis and embolism, one case respectively.

**Children.**—The average strength was 411, the cases of sickness were 90 in number, and there were 11 deaths. The ratio of prevalence of sickness, 218·9 per 1,000, is below that in the preceding by 51·3, and the ratio of mortality, 26·76 per 1,000, is higher by 4·03. There were 29 cases of measles, and among the remainder the principal illnesses were bronchitis 13 cases, diarrhoea 9, and debility 6 cases, &c. The deaths were diarrhoea, 3, debility and pneumonia, of each 2, and tubercle, tonsillitis, teething, and drowning one case respectively.

**Sanitary Conditions.**—The Principal Medical Officer reports that the sanitary condition of the barracks and camps has been fairly maintained throughout the Command during the year, and notwithstanding a great portion of the troops were on field service in Zululand for several months, the general health, except as regards venereal disease, was excellent. At Cape Town it is said that many sanitary improvements were in progress; that which most directly affects the troops being the provision of an intercepting sewer, which is to remove the outlets of the various sewers which opened on the seashore above low water-mark in the immediate neighbourhood of the Castle; it was, how-

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ever, far from completion, and it was feared that when finished it would not be perfect on account of want of sufficient fall.

The water supply at Cape Town is from the town reservoir, and is of good quality. Works are being undertaken to increase the quantity of the supply, for though hitherto fairly abundant it has not been sufficiently so to meet the wants of an increasing population. At Wynberg, also, waterworks have been established from which the troops are supplied. In a short time pipes will be laid down throughout the camp, and properly laid on to all the baths and washhouses.

With regard to barracks, it is reported that no great changes took place in this direction during the year. Some minor sanitary improvements and some considerable repairs to the barracks and castle were effected, and further progress was made with the hut camp at Wynberg, but the drainage there still continued defective and required further improvement. It has frequently been in contemplation, the Principal Medical Officer states, to rebuild the barrack accommodation at Cape Town; but as it now seems that the buildings are likely to be permanently occupied, he mentions some changes which are, in his opinion, highly desirable if not absolutely necessary. These are the provisions of married quarters, as those at present occupied as such could hardly have been intended for anything but temporary occupation; the provision of officers' quarters, which would afford the comfort that should be expected in permanent quarters in peace time; and a new military prison, as that at present in use is very antiquated and at best only a makeshift.

The hospitals remain the same as in previous years, but a good hospital at Wynberg is urgently required, and, it is believed, has been sanctioned.

In Natal no great sanitary changes took place during the year, or are in contemplation, except that it has been suggested to build stone barracks at Etshowe for the better protection of troops in the event of future wars in that country. Since the late trouble in Zululand it is uncertain, the Principal Medical Officer remarks, what the authorities will determine as to the permanent garrison of this part of the Command, and, therefore, what the sanitary requirements may be. It is stated that in Zululand storms are of such severity that frequently tents are struck by lightning, and men either killed or injured; steps are being taken, therefore, to provide lightning conductors to the tents with a view of minimising the danger.

The sanitary conditions of barracks, quarters, and hospital, and their vicinity at St. Helena, are generally satisfactorily reported on.

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# IX.—ON THE HEALTH OF THE TROOPS SERVING IN THE ISLAND OF MAURITIUS.

## *Sickness and Mortality.*

The average strength of warrant officers, non-commissioned officers and men serving in the Command during the year was 405. The force consisted of No. 2 Battery, 1st Brigade, Southern Division, Royal Artillery, a detachment, 1st Battalion Royal Inniskilling Fusiliers, which was relieved towards the close of the year by a detachment, 1st Battalion North Staffordshire Regiment; detachments, Royal Engineers and Departmental Corps and Garrison Staff. *Mauritius.*

The most important of the health statistics of these troops are shown in the following table:—

| 1888.<br>Average Strength. | Admissions. | Deaths          |              |        | Invalids   |                     | Average daily Sick. | Ratio per 1,000 of Strength. |         |                     |                              |                  |
|----------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|------------------------------|---------|---------------------|------------------------------|------------------|
|                            |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |                     | Admissions.                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
|                            |             |                 |              |        |            |                     |                     |                              |         |                     |                              |                  |
| 405                        | 400         | 5               | —            | 5      | 23         | 8                   | 21·33               | 967·7                        | 12·35   | 56·79               | 19·75                        | 52·67            |

Compared with corresponding results in the preceding year, a very considerable decline is observed in the amount of sickness, the admission rate being reduced by 604·8, and the constantly sick rate by 30·20 per 1,000; the death rate is also lower by 7·65; and in comparison with average similar ratios for the previous 10 years the decrease in sickness is still more marked, the admission rate being lower by 1230·4, and the rate of constant inefficiency by 35·91 per 1,000, and there is a decline of 6·42 in the mortality rate.

The average sick time to each soldier was 19·28 days, and the average duration of each case of sickness 19·52 days, the former being shorter than the corresponding period in the previous year by 10·97 days, and than the decennial average period by 13·05 days, while the latter is longer than in the previous year by half a day, and the corresponding period, taking the average of 10 years, by nearly 5 days. The sickness and mortality in individual corps are shown in Abstract XXXIX. The highest ratios of admission and constantly sick are observed, as in the previous year, in the Artillery, 1519·2 and 69·71 per 1,000 respectively. In the Infantry the admission rate was 838·3 per 1,000, and the constantly sick rate 47·37. All these ratios are lower than the corresponding rates in the previous year. The sick rates in the Garrison Staff and Departments were very low. Of the 5 deaths two occurred in the Artillery and one in the Engineers, Infantry, and Departments respectively. With the regard to the age of the men it is observed that the admission rate of men between 20 and 25 years of age was 1000·0, that of men between 25 and 30 years of age 1075·6, and that of men over 30 years of age 605·2 per 1,000. Mortality was nil among men under 20 years of age, at the rate of 8·13 among men between 20 and 25 years, and at 25·21 among men between 25 and 30 years of age. With regard to service in the Command the admission ratio for men in their first year was 1757·5 per 1,000, for men in

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their second year it increased to 1361·5, and to a much higher rate among men in their third year of service. Four of the deaths, equal to a ratio of 12·70 per 1,000, occurred among men in their first year of service in the Command, the remaining death was that of a man in his third year of service at the station.

The admissions, deaths, invaliding, &c., in the different groups and orders of diseases are shown in Abstract XI.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—In the first sub-group of these diseases there were in all six admissions. Among them were two cases of enteric fever, one of which was fatal, in the preceding year there was only one case. A case returned as typho-malarial fever is also shown, and proved fatal. It is stated that it was found impossible to connect the cases of enteric fever with any particular barrack, and the insanitary condition of Port Louis is sufficient to account for them. There were only three cases of dysentery during the year, the admission ratio being 7·4 per 1,000 as compared with 62·5 per 1,000 in the previous year.

**Malarial fevers.**—179 admissions and 2 deaths are recorded, in the preceding year there were 259 admissions and 2 deaths. The admission rate, 442·0 per 1,000, is below the corresponding ratio in the preceding year by 205·5, and greatly below, less than half, the average ratio for the preceding five years. Of the total number of cases 99 were ague and 80 remittent fever. All the cases, except 3 of remittent fever, were treated at Curepipe. Of the 99 admissions for ague, 79 were direct from Port Louis and 20 from Curepipe, the latter were relapses or occurred in men who had previously suffered. The remittent fever cases generally came direct from Port Louis, and the three cases which are shown as admitted there were subsequently transferred to Curepipe. Of the two fatal cases of remittent fever one came from the Line barracks, Port Louis, and the other from Victoria battery.

**Septic diseases.**—Two cases of erysipelas are returned, one of which proved fatal.

In the next sub-group, venereal diseases, it is observed that *primary syphilis* caused 27 admissions, equal to a ratio of 66·7 per 1,000, as compared with 60·0 in the previous year. Including the admissions for simple venereal ulcer, the admission ratio for primary venereal sores amounts to 118·6 per 1,000, this is lower than the corresponding rate in the previous year by 38·9, and than the average ratio for the preceding five years by 13·5. *Secondary syphilis* caused 18 admissions, equal to 44·4 per 1,000, which is greater than the corresponding ratio in the previous year by 11·9, and than the quinquennial average rate by 4·4 per 1,000. *Gonorrhoea* shows 36 admissions, being in the ratio of 88·9 per 1,000, which is considerably below the last year's rate by 71·1, and below the average rate for five years by 27·1. Including all forms of venereal disease, the total admission rate amounted to 251·9 per 1,000, this is below the corresponding rate in the previous year by as much as 98·1. The amount of constant inefficiency from these diseases was equal to 14·16 men per 1,000, which is less than in the previous year by 8·96, and than the quinquennial average rate by 8·86 per 1,000.

Under the head of *parasitic diseases* were two admissions, one a case of *tænia solium*, and the other one of *bilharzia hæmatobia*, which was believed to have been contracted in Natal. *Alcoholism* caused one admission, and *debility* 5, as compared with 3 and 8 respectively in the preceding year.

**Rheumatism** caused 13 admissions, or 32·1 per 1,000, just about the average rate, and slightly above that in the preceding year. Three of the cases were rheumatic fever. It is remarked that considering the heavy rainfall at Curepipe it would be supposed that rheumatic affections would be more prevalent than they are. Tubercular disease of the lung caused one admission, and there was one also for non-malignant growth.

**LOCAL DISEASES.**—The admissions in the different orders of local diseases were but few, except in the case of diseases of the digestive and generative system. *Nervous affections* show two admissions, only one being a case of neuralgia and the other one of melancholia. *Ophthalmic* diseases were represented by two cases of conjunctivitis, and *aural* diseases by a case of inflammation of the external meatus. *Diseases of the Circulatory System* included two

cases of palpitation and one of aneurysm, and diseases of the respiratory system *Mauritius*, two cases of bronchitis and three of asthma. Diseases of the digestive system caused 21 admissions, diarrhoea, dyspepsia, and hepatic affection being the chief diseases, the admission ratio was 51·9 per 1,000. Diseases of the lymphatic and glandular system gave an admission rate of 22·2 per 1,000, and diseases of the generative system a ratio of 66·7 per 1,000, chiefly dependent on simple venereal ulcer, which caused 21 admissions out of a total of 27. Urinary diseases gave three admissions, two being cases of hæmaturia. Cutaneous affections caused 10 admissions, chiefly ulcers, and the remaining local affections comprised 6 admissions for diseases of the connective tissue, and one for periostitis. The admission rate for each order of local disease shows a decrease, in some cases a very marked one, as compared with the corresponding result in the previous year.

*Injuries* were 18 in number, the admission ratio being 44·4 per 1,000, which is considerably below the rate in the previous years, and below the average rate. The cases call for no special remark.

*Invaliding*.—23 men were invalided to England, being in the ratio of 56·79 per 1,000 of the strength, which is below the corresponding ratio in the preceding year by 8·21, but higher than the average rate for the preceding 10 years by 6·55 per 1,000. The invaliding from different corps was as follows:—10 men, equal to a ratio of 96·15 per 1,000, from the artillery, 10 men, equal to 40·81 per 1,000, from the infantry, 2 men from the engineers, and one man from departmental corps. With regard to age, 12 invalids, equal to 48·78 per 1,000 were between 20 and 25 years of age; 6 men, or 50·42 per 1,000, between 25 and 30 years of age, and 5 men, or 131·58 per 1,000, were over that age. Invaliding according to length of service in the Command shows 18 men, equal to 57·14 per 1,000, to have been in their first year, 2 men in their second year, 2 men in their third year, and one over that time. The causes of invaliding were malarial diseases 9 cases, debility 3, hæmaturia 3, palpitation 2, and secondary syphilis, tubercle of lung, melancholia, aneurysm, asthma, and diarrhoea one case respectively. The number of men finally discharged the service by invaliding was 8, equal to a ratio of 19·75 per 1,000, which is below the corresponding rate in the previous year by 17·75, but above the average rate for the previous 10 years by 1·24 per 1,000. The disabilities necessitating discharge were melancholia 2 cases, and bilharzia hæmatobia, debility, iritis, palpitation, hæmaturia, and tubercle of lung one case respectively.

*Officers*.—The average strength was 22, and there were 12 cases of illness, 8 of them being attacks of malarial fever. The ratio of prevalence of sickness, 545·4 per 1,000, is higher than in the preceding year by 181·8. One officer was invalided on account of sclerosis of the spinal cord.

*Women*.—The average strength was 17, and there were 9 attacks of illness, of which 4 were remittent fever, one case of which proved fatal. There was one case of measles.

*Children*.—The average strength was 23, and there were 12 attacks of illness and 3 deaths. The rate of prevalence of sickness was 521·7 per 1,000, an increase of 331·2 on the preceding year. The diseases comprised 5 cases of measles, 6 of remittent fever, and one of diarrhoea, and there was one death from each of these diseases.

*Sanitary Conditions*.—The Senior Medical Officer, Brigade Surgeon J. Fleming, M.D., reports that "the health of the troops has been very good during the year, and this very satisfactory state must be attributed to the residence of most of the men at Curepipe in the higher part of the island; increased accommodation for troops is still required there. Port Louis still upholds its evil reputation, and it is yearly becoming more unhealthy. The Line barracks are situated in one of the most unhealthy parts of the town, and as few men as possible, consistent with the performance of the necessary duties, have been quartered there. The only place free from malarial fever appears to be at the entrance to the harbour close to and opposite Fort George. The sailors on shipboard there do not suffer, and except their vessels are brought into the docks they remain free from it. Hence it might be worth consideration to place troops for duty in Port Louis on board ship at this spot."

The accommodation for the troops was generally good with plenty of cubic space and superficial area in all occupied buildings. At Curepipe the men are



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comfortably housed considering the damp climate, and the barracks were kept in good condition during the year; no new buildings of any importance were constructed, except two new cells of stone and a good skittle alley of wood. The surface drainage was generally good, and as the camp is being extended, it is anticipated that it will be further improved. The hospital, being built of stone, gives trouble on account of the walls being cold and damp, though fires are kept up in the stoves. The low verandah gives the place a gloomy appearance. The Senior Medical Officer states that a wooden hospital hut to hold 50 sick is urgently required. It should be well raised off the ground on stone pillars; indeed all habitations at Curepipe should be built thus.

At Fort George there is sufficient cubic and superficial space for each person, but the ventilation is insufficient and the walls are very damp during the rainy season; these defects were pointed out.

There is no gymnasium, but if there was one at Curepipe it would be a great boon to the men.

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## X.—ON THE HEALTH OF THE TROOPS SERVING IN THE ISLAND OF CEYLON.

### *Sickness and Mortality.*

#### I.—WHITE TROOPS.

The average strength of warrant officers, non-commissioned officers, and men Ceylon. was 1,133, being an increase of 56 on the preceding year. The force serving comprised the 8th and 9th Batteries, 1st Brigade, Southern Division, Royal Artillery, throughout the year; the 1st Battalion Argyll and Sutherland Highlanders, from the 1st January to 6th December, when it embarked for Hong Kong, on relief by the 1st Battalion Gordon Highlanders from Malta; detachments, Royal Engineers and Departmental Corps, and Garrison Staff. A large draft for the artillery and infantry arrived from England early in the year. The troops were distributed as follows:—The headquarters and five companies of the infantry battalion and one battery of artillery at Colombo, two companies of infantry at Kandy, and one battery of artillery at Trincomalee. A company of infantry quartered at Galle was withdrawn in March, and the garrison of Trincomalee augmented by a company from Colombo.

The more important of the health statistics of the troops as a whole are given in the following table, and those of particular corps will be found in Abstract XXXIX.

| 1888.<br>Average Strength. | Admissions. | Deaths          |              |        | Invalids   |                     | Average daily Sick. | Ratio per 1,000 of Strength. |         |                     |                              |                  |
|----------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|------------------------------|---------|---------------------|------------------------------|------------------|
|                            |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |                     | Admissions.                  | Deaths. | Invalids Sent Home. | Invalids finally Discharged. | Constantly Sick. |
| 1,133                      | 1,265       | 18              | —            | 18     | 19         | 10                  | 72·72               | 1116·5                       | 15·68   | 16·76               | 8·82                         | 64·18            |

Comparing these results with those of the preceding year, a decrease of 22·8 per 1,000 has occurred in the ratio of admission, and one of 2·71 in that of constant inefficiency through sickness, but there was an increase of 1·02 in that of mortality; but compared with average similar ratios for the preceding 10 years a decrease of 70·6 per 1,000 is observed in the admission rate, and one of 1·57 in the death rate; but there was an increase of 2·25 in the ratio of constantly sick. The average sick time to each soldier was 23·49 days, and the average duration of each case of sickness, 21·04 days, the former being shorter by almost a day, and the latter by about a third of a day, than the corresponding period in the preceding year, while compared with average similar periods for the preceding 10 years the average sick time to each man is increased by nearly a day, and the average duration of each case of sickness by two days.

With regard to separate corps, the admission ratios in the two batteries of artillery were 792·5 per 1,000 in No. 8 Battery, 1st Brigade, Southern Division, at Colombo, and 1037·0 in No. 9 Battery at Trincomalee; but the ratio of constantly sick of the former, 63·40, is higher than that of the latter, 60·19. In the infantry the admission rate was 1234·3 per 1,000 in the Argyll and Sutherland Highlanders, and 666·7 in the Gordon Highlanders, the constantly

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sick rates being 70.09 and 24.60 respectively. It must be remembered, however, that the latter regiment was only a few weeks in the garrison. The mortality rate in the two batteries of artillery, taken together, was 28.03 per 1,000, dependent on 6 deaths, and that of the infantry 12.59, dependent on 11 deaths. Compared with results in the preceding year the ratio of admissions in the artillery was somewhat lower, but those of mortality and constantly sick were rather higher. In the infantry the ratios both of sickness and mortality were lower than those in the year preceding.

The admission ratio among men under 20 years of age was found to be 1062.5 per 1,000, that among men between 20 and 25 years was 1367.6, that among men between 25 and 30 years 772.7, and over that age 756.0. There was no mortality among men under 20, but a ratio of 15.58 per 1,000 among men between 20 and 25 years, one of 19.89 among men in their next quinquennium, and one of 8.08 over that age. Compared with results in the previous year an increase is observed in the admission rates of men under 20 years and between 20 and 25 years of age, but there was a decline in the next quinquennium. Mortality increased among men between 20 and 25 years of age; but decreased among men between 25 and 30 years. With regard to service in the Command, the admission ratio of men in their first year was 1108.1 per 1,000, among men in their second year 1599.1, in their third year 963.2, and among those of longer service 235.3. Mortality in the first year of service was 13.51, in the second year 28.92, and in the third year 12.27 per 1,000. Compared with the previous year the admission ratio of men in their first year of service shows a slight decrease, and in the second and third year an increase. Mortality was greater in the first and second years of service, but lower after that time.

The statistics of sickness and mortality in the different groups and orders of diseases are shown in Abstract XII.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—*Eruptive fevers* were represented by a single case of measles at Kandy. *Enteric fever* caused 19 admissions and 7 deaths, being in the ratios of 16.8 and 6.18 per 1,000 respectively, the former being higher than the corresponding rate in the preceding year by 7.5, but the latter lower by .31. Compared, however, with average similar rates for the preceding five years there is an increase of 11.2 in the admission rate and one of 3.05 in the death rate. The per-centage of mortality to attack was 37, which is lower than in the previous year, and below the average rate. Of the cases, 17 and 5 deaths occurred at Colombo, one case and one death at Trincomalee, and one case and one death at Kandy. Brigade Surgeon S. Archer, Senior Medical Officer, states that he is "inclined to think that the number of cases, both in the year under report and in previous years, has been understated, as the disease so frequently runs an irregular course in this country that the diagnosis is uncertain and difficult. The probability is that some of the more protracted cases returned as simple continued fever were in reality enteric fever. In two of the fatal cases all diagnostic symptoms were absent; there was no diarrhoea, abdominal pain or tenderness, gurgling in iliac fossa, or eruption, and it was only when peritonitis, consequent on perforation, occurred that the disease was recognised. The unusually large proportion of deaths to cases, 55 per cent. in the last few years, favours this view."

With regard to the causation of the disease at Colombo, the Senior Medical Officer states that he was formerly of opinion that the disease could not be traced to any insanitary condition in the barracks or vicinity, but that now he is inclined to believe that the cases are caused by sewer gas generated in the main drain into which all the surface drains of that portion of the town called the Fort empty themselves, and which, no doubt, carries away a quantity of filth from the subsidiary drains of streets occupied by natives. It, moreover, receives the contents of an old sewer which is believed to be in connexion with latrine pits used by the native employes of large business firms in the town. Very few of the numerous openings of the drains about the barracks are trapped, and foul gases may readily find their way into the rooms occupied by the men. The case at Kandy was believed to have been attributable to a man, contrary to orders, using a latrine in the vicinity of a foul tank which was being cleared out. The case at Trincomalee could not be traced to any insanitary condition.

*Simple continued fever* was the cause of 130 admissions, equal to a ratio of 114·7 per 1,000, which is above the corresponding rate in the preceding year by as much as 52·5, and above the quinquennial average rate by 36·0. The Senior Medical Officer says that "of the admissions 64 occurred in Trincomalee, and almost all of them between the middle of March and the middle of May; the epidemic was confined almost entirely to the men of the Argyll and Sutherland Highlanders, recently arrived at the station. The great majority of the cases of simple continued fever were of short duration, and due, no doubt, to climatic causes, but in others convalescence was retarded, sometimes for weeks, and these were probably modifications of "enteric fever."

*Dysentery* was the cause of 39 admissions, the ratio being 34·4 per 1,000, which is an increase of 20·5 on the corresponding rate in the previous year; 33 of the cases, one being fatal, occurred at Colombo, and there were 5 cases at Kandy and one at Trincomalee.

*Malarial fevers* show only 5 admissions, the ratio 4·4 per 1,000 being below that in the previous year by 7·7, and below the average ratio for five years by 38·8. Of the cases 2 were remittent fever and 3 ague.

Under the head of *septic diseases* two admissions are recorded; both were cases of erysipelas and both occurred at Trincomalee.

*Venereal Diseases.*—*Primary syphilis* shows 36 admissions, equal to a ratio of 31·8 per 1,000, as compared with 43·6 in the previous year. Adding the sickness from simple venereal ulcer, the ratio of admission for primary venereal sores was 191·5 per 1,000, which, compared with the corresponding result for the preceding year, shows a decline of 19·2; but compared with the average of the previous five years an increase of 30·5. *Secondary syphilis* was the cause of 51 admissions, equal to a ratio of 45 per 1,000. Compared with the similar ratio in the preceding year, a marked increase is observed, one of 26·4, and compared with the quinquennial average rate there is an increase of 19·3. *Gonorrhoea*, on the other hand, was less frequent, the admission ratio, 118·3 per 1,000, dependent on 134 admissions, showing a decline of 66·5 as compared with the corresponding rate for the previous year, and one of 43·7 as compared with the average rate. Including all forms of venereal diseases, the total admission ratio was 354·8 per 1,000, which differs very slightly from the average rate, but is lower than in the preceding year by 59·3. The ratio of constant inefficiency on account of these diseases was 21·87 per 1,000, being lower than that in the preceding year by 2·85, and fractionally below the average rate. The Senior Medical Officer remarks that "the contagious diseases ordinance ceased to be enforced in April, and was repealed in the autumn under orders from the Home Government, but the amount of venereal disease has not increased, chiefly, I think, because the powers conferred by the Act were so restricted that the police were unable to place on the register hundreds of women who were known to be living as prostitutes, a large proportion of whom were, no doubt, diseased. Of those who were registered on an average 50 per cent. were under treatment in the lock hospital."

*Parasitic diseases* show one case of *tænia solium*; *alcoholism* caused only 2 admissions as compared with 10 in the previous year; and there were 9 admissions for *debility* as compared with 15.

*Rheumatism* caused 26 admissions, equal to a ratio of 22·9 per 1,000, which is higher than in the previous year by 9·0, but is about the average rate. Among the cases treated there was one of rheumatic fever.

*Tubercular disease* of the lung was the cause of 6 admissions and 2 deaths. The admission rate, 5·3 per 1,000, is higher than that in the previous year by ·7, and the death rate, 1·76, is higher by ·83.

The remaining admissions in this group of general diseases were 10 for non-malignant new growth and 2 for *anæmia*.

*LOCAL DISEASES.*—*Diseases of the Nervous System* were the cause of 17 admissions, being in the ratio of 15·0 per 1,000, which is above the rate in the previous year by 2, and also above the average. Among the admissions were 3 for epilepsy, one for sclerosis of spinal cord, and one for dementia.

*Ceylon.*

*Diseases of the Organs of Special Senses* caused 33 admissions, or 29·1 per 1,000, being below the last year's rate by 5·3, and below the average rate. Only 4 admissions are recorded for affections of the eye, and the remainder were all for aural diseases, principally inflammation of the external meatus.

*Diseases of the Circulatory System.*—14 admissions are recorded, being in the ratio of 12·3 per 1,000, which is in excess of the previous year's rate, but is below the average. With the exception of one case of valve disease and one of hypertrophy of the heart, all the admissions were for palpitation.

*Diseases of the Respiratory System.*—The admissions were 24 in number, and there was one death. The admission rate, 21·2 per 1,000, is more than double that of the preceding year, but is still below the average rate. Of the admissions, 19 were bronchitis and 5 were pneumonia. The death was due to pneumonia.

*Diseases of the Digestive System* caused 111 admissions, equal to a ratio of 98·0 per 1,000, a decline of 24·6 from the last year's rate, and a good deal below the average rate. The principal causes of admission were diarrhoea 33 cases, dyspepsia 20, and hepatic diseases 22 cases. 6 deaths occurred, and comprised 3 from abscess of the liver, 2 from peritonitis, and one from enteritis.

*Diseases of the Lymphatic and Glandular System.*—The admissions numbered 105, the ratio was, therefore, 92·7 per 1,000, lower than in the previous year by 5·7, but above the average rate. "The great majority of the admissions were for inflammation or suppuration of the inguinal glands not following, as far as could be ascertained, venereal sores, and as a rule were very chronic in character, the average duration of each case of sickness from this cause being 35 days."

*Diseases of the Generative System* caused an admission ratio of 185·3 per 1,000, which is less than that in the preceding year by 12·5. The number of admissions was 210, of which 181 were cases of simple venereal ulcer. The remainder were principally cases of orchitis.

*Diseases of the Urinary System* gave an admission ratio of 10·6, and *diseases of Organs of Locomotion* one of 6·2 per 1,000, both being higher than in the preceding year; but *diseases of the Connective Tissue* with a ratio of 16·8 show a marked decrease. *Diseases of the Skin* caused 81 admissions, or 71·5 per 1,000, which is below the average rate, but above the rate in the previous year. The principal diseases causing admissions were ulcers, boils, and eczema.

*Injuries* gave an admission ratio of 135·9 per 1,000, an increase of 9·6 on the last year's rate. The number of admissions was 154, but it is said that none of the injuries were very severe or call for remark, except one case of multiple injury, fatal, a man being accidentally blown from a gun while a salute was being fired at Trincomalee.

*Invaliding.*—The number of men invalided home during the year was 19, being in the ratio of 16·76 per 1,000 of strength, which is higher than the corresponding rate in the previous year by 3·76, but is lower than the average rate for the previous 10 years by 19·13. The highest ratio of invaliding in any one corps was 47·17 per 1,000 in No. 8 Battery, 1st Brigade, Southern Division, Royal Artillery, the next being 27·78 in No. 9 Battery of the same brigade, the lowest ratio was 12·33 in the Argyll and Sutherland Highlanders. As to age 9 men, or 14·02 per 1,000, were between 20 and 25 years of age, 3, or 8·52 per 1,000, were in the next quinquennium, and 7, or 56·57 per 1,000, were over that age. Compared with results in the previous year an increase is observed in all these ratios. As to length of service in the Command, 2 men, equal to 9·01 per 1,000, were in their first year, 13, or 53·72 per 1,000, were in their second year, and 4, or 6·13 per 1,000, were in their third year of service. The ratios are also higher than those with which they correspond in the previous year. The principal causes of invaliding to England were nervous diseases 4 cases, including one of mental affection, heart disease 3 cases, dysentery 2 cases, &c. The number of men finally discharged by invaliding was 10, being in the ratio of 8·82 per 1,000, which is fractionally below the corresponding rate in the preceding year, and below the decennial

average rate by 5·80. The disabilities necessitating discharge were nervous affection 3 cases, heart disease 2, and constitutional syphilis, debility, opacity of cornea, incontinence of urine, and flat foot one case respectively. *Ceylon.*

*Officers.*—The average strength was 52, the number of attacks of illness was 39, and there was one death. The ratio of prevalence of sickness was, therefore, 750·0 per 1,000, which is higher than that for the previous year by 115·4. The principal causes of sickness were fevers, including one case of enteric fever, hepatic diseases, and injuries. The cause of death was heat apoplexy. No officer was invalidated.

*Women.*—The average strength was 61, and there were 24 attacks of illness. The admission rate, 393·4 per 1,000, is above that in the preceding year by 54·4. Debility and fevers were the principal causes of sickness.

*Children.*—In an average strength of 106 children there were 23 attacks of illness, or 217·0 per 1,000, as compared with 145·8 in the preceding year, and there were 3 deaths, or 28·30 per 1,000, as compared with 10·31. The principal causes of admission were fevers, bronchitis, and debility. Two of the deaths are returned as infantile convulsions and one as debility.

*Sanitary Conditions.*—The Senior Medical Officer reports that the sanitary condition of all stations was satisfactory, except that at Colombo the system of drainage of barrack enclosure and outhouses is faulty. This has already been alluded to above as a probable cause to which to attribute the occurrence of cases of typhoid fever. In order to remedy this condition the Senior Medical Officer states that he recommended that all openings of the drains should be trapped without delay, but subsequently the more radical alternative was suggested of taking up all the underground drains about the barracks, severing the connexion with the town sewer, diverting surface water to the lake, and arranging for the removal of fluid by contract. The latrines being on the dry-earth system no change is necessary as regards them. This procedure was approved of, and there was reason to hope that it would be carried out in the course of the current year.

The barrack accommodation was sufficient, there was no overcrowding and the barrack rooms were thoroughly ventilated. The water supply is also reported to be generally satisfactory. There was sufficient variety in the mode of cooking, but it is remarked again by the Senior Medical Officer that it is very desirable that an issue of mutton should be made twice a week as the present ration consists of beef only.

The following improvements were carried out during the year:—At Colombo a hydrant was provided in the barrack square. At Kandy a military prison has been built. At Trincomalee four wells were roofed over, a water tank provided at the Royal Artillery barracks. At the temporary barracks ventilation improved and floors relaid. Lower infantry barracks Benham's range provided.

## II.—BLACK TROOPS.

The black troops consisted of one company Ceylon Gun Lascars, average strength 93; the Ceylon Company, Eastern Battalion, Royal Engineers, average strength 39, and a few Mounted Orderlies, average strength 4. Total average strength 136. The Gun Lascars are distributed between Colombo and Trincomalee, the Engineers are quartered at the latter station; and the Mounted Orderlies were employed as escort to the Governor. During the year, however, they were amalgamated with the Gun Lascars.

The admissions into hospital were 75 in number, equal to a ratio of 551·5 per 1,000, and the average number constantly sick was 2·23, equal to a ratio of 16·76 per 1,000.

Compared with results in the preceding year the admission ratio shows an increase of 6·1, and the ratio of constantly sick a decrease of 5·88 per 1,000. There was no death, and only one man was invalidated. The most frequent causes of admission were simple continued fever 13 cases, contusions 13, and wounds 10. None of the cases call for remarks. The cause of invaliding was tubercle of the lung.

# XI.—ON THE HEALTH OF THE TROOPS SERVING IN CHINA AND THE STRAITS SETTLEMENTS.

## *Sickness and Mortality.*

### I.—WHITE TROOPS.

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The average strength of the troops serving in the Command during the year was 2,329. The force was distributed in the following manner:—At Hong Kong, No. 5 Battery 1st Brigade, Eastern Division, and No. 7 Battery 1st Brigade, Western Division, Royal Artillery; the 2nd Battalion Northamptonshire Regiment; detachments Royal Engineers and Departmental Corps, Garrison Staff, and for the last ten days of the year the 1st Battalion Argyll and Sutherland Highlanders. At the Straits Settlements No. 6 Battery, 1st Brigade, Eastern Division, and No. 9 Battery, 1st Brigade, Western Division, Royal Artillery, the 2nd Battalion South Lancashire Regiment, detachments Royal Engineers and Departmental Corps, Garrison Staff, and for a few days at the commencement of the year, the 2nd Battery, 1st Brigade, Southern Division, Royal Artillery, which then left the Command for Mauritius.

The subjoined table gives the principal statistics of sickness and mortality among the troops in the Command, as well as those of the force in each of its divisions.

| 1888.<br>Stations.          | Average Strength. | Admissions. | Deaths.         |              |        | Invalids.  |                     |
|-----------------------------|-------------------|-------------|-----------------|--------------|--------|------------|---------------------|
|                             |                   |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |
| Hong Kong . . . .           | 1,241             | 1,342       | 16              | 1            | 17     | 32         | } 19                |
| Straits Settlements . . . . | 1,088             | 1,298       | 9               | 1            | 10     | 8          |                     |
| Total . . . . .             | 2,329             | 2,640       | 25              | 2            | 27     | 40         | 19                  |

(continued.)

| 1888.<br>Stations.          | Average daily Sick. | Ratio per 1,000 of Strength. |         |                |                              |                  |
|-----------------------------|---------------------|------------------------------|---------|----------------|------------------------------|------------------|
|                             |                     | Admissions.                  | Deaths. | Invalids Home. | Invalids finally Discharged. | Constantly Sick. |
| Hong Kong . . . . .         | 69.13               | 1081.4                       | 13.70   | 25.78          | } 8.16                       | 55.70            |
| Straits Settlements . . . . | 81.29               | 1193.0                       | 9.19    | 7.35           |                              | 74.71            |
| Total . . . . .             | 150.42              | 1123.5                       | 11.59   | 17.18          | 8.16                         | 64.59            |

Comparing the above statistics with regard to Hong Kong with the corresponding results in the preceding year, a decline of 87·9 per 1,000 is observed in the ratio of admission, but there is an increase of 5·49 in the ratio of mortality, and one of 8·42 in that of constantly sick. The average sick time to each soldier, 20·38 days, is longer by 3·13 days, and the average duration of each case of sickness, 18·85 days, is longer by 4·09 days than the corresponding rate in the previous year.

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In the Straits Settlements there was a marked increase in the amount of sickness and mortality, the admission ratio for the year under report being greater than that in the previous year by 400·9 per 1,000, the death rate by 6·33, and the constantly sick rate by 36·07; while the average sick time to each soldier, 27·34 days, is longer by 13·24 days, and the average duration of each case of sickness, 22·92 days, is longer by 5·12 days than in the preceding year.

Taking all the forces in the Command and comparing the results gained with those of the preceding year, it is found that the admission ratio shows an increase of 138·8 per 1,000, the death rate one of 5·85, and the constantly sick rate one of 21·31. The average sick time, 23·64 days, is longer by 7·84 days, and the average duration of each case of sickness, 20·85 days, is longer by 4·97 days. Comparing the year's results with those of the average of the preceding 10 years the increase in admission rate is equal to 65·3 per 1,000, that in the mortality rate to 2·87, and that in the ratio of constant inefficiency on account of sickness to 13·98. The average sick time to each soldier is longer by 5·17 days, and the average duration of each case of sickness longer by 3·56 days.

The statistics of sickness and mortality in separate corps will be found in Abstract XXXIX. The admission, mortality, and constantly sick rates of the artillery have all considerably increased, by 356·6, 4·56, and 21·15 per 1,000 respectively. Of individual batteries, No. 6, 1st Brigade, Eastern Division, at Fort Canning, showed the highest admission and constantly sick rates, 1383·9 and 63·75 per 1,000, but the lowest mortality rate 8·93 per 1,000. The lowest admission and average sick rates were 959·6 and 49·40 in No. 5 Battery, 1st Brigade, Eastern Division, at Hong Kong, but this battery had the highest death rate, 20·20 per 1,000. Of the infantry regiments it is observed that the admission rate of the 2nd Battalion South Lancashire Regiment at Tanglin and Penang, 1217·4 per 1,000, has increased by 394·1, the death rate, 8·45, by 4·34, and the constantly sick rate, 78·42, by 39·98. The 2nd Battalion Northamptonshire Regiment at Hong Kong also shows high ratios of sickness and mortality, admission being 1153·4 per 1,000, death 11·53, and constantly sick 61·22; but the admission and constantly sick rates have declined by 121·7 and 11·70 per 1,000 respectively, and the death rate has increased by 5·97 as compared with the results in the previous year. The ratios of sickness in the Engineers and Departmental Corps were as usual low, but were above the corresponding ratios in the previous year.

With regard to the age of the men and its influence on sickness, it is calculated that the admission rate of men under 20 years of age was 890·9, that among men between 20 and 25 years 1159·4, that among men between 25 and 30 years 1245·8, and among men over that age 806·2 per 1,000. In the preceding year the highest admission rate was among men between 20 and 25 years of age, while in the year under report it is in the succeeding quinquennium. Compared with the preceding year all these ratios show an increase, particularly that of men between 25 and 30 years of age. The mortality rate was 9·02 among men between 20 and 25 years of age, 13·74 among men in the next quinquennium, and 13·84 among men over that age. These ratios are also all above the corresponding rates in the previous year. As to length of service in the Command, it is observed that the admission rate of men in their first year of service was 1035·5 per 1,000, of men in their second year 1295·9, of men in their third year 1082·0, and of men beyond that service 854·2. In the previous year the highest admission rate was among men in their third year of service. Compared with results in the preceding year the ratios of admission of men in their first and second years' service have increased, but the remainder have decreased. The mortality rate among men in their first year of service in the Command was 9·27 per 1,000, that of men in their second year of service 10·53, and that of men in their



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third year 14.64; all these ratios have increased as compared with corresponding rates in the previous year.

The statistics of sickness and mortality according to the different groups and orders of diseases are shown in Abstract XIII.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—Under the head of *eruptive fevers* are returned three admissions, all being cases of small-pox. These occurred at Hong Kong, where the disease was epidemic among the Chinese in the early months of the year. There was not a single admission for *enteric fever* throughout the Command, though in the previous year there had been 15 cases and 3 deaths. *Simple continued fever* caused 69 admissions, equal to a ratio of 29.6 per 1,000, which is below the corresponding ratio in the preceding year by 7.9, and below the average rate for the preceding five years very considerably. All the cases but 6 occurred in the Straits Settlements, being in the ratio of 58.0 per 1,000 as compared with 49.5 in the preceding year.

*Cholera* caused considerable mortality in the civil gaol and among the native community in Hong Kong in June and in the early part of July, and in the latter month one case, fatal, occurred amongst the troops.

*Dysentery.*—30 admissions and one death are returned, being in the ratios of 12.9 and .43 per 1,000. In the previous year the admission rate was 10.6. Of the total number 26 cases, including that which was fatal, occurred in Hong Kong, and the remaining four in Singapore, one case being at Fort Canning and the other three at Tanlin. Some of the attacks were very severe.

*Malarial Fevers.*—There were 547 admissions and 7 deaths from malarial fevers, being in the ratios of 234.9 and 3.00 per 1,000. Compared with the corresponding ratio for the preceding year, the admission ratio shows a decline of 62.5, and compared with the similar average rate for the previous five years a decrease of 28.3 per 1,000. The ratio of constant inefficiency on account of these fevers, 6.78 per 1,000, is only .06 below the corresponding ratio in the preceding year. The mortality rate is increased by 2.56 per 1,000 as in the preceding year; there was only a single death from this cause. The Principal Medical Officer, Deputy Surgeon-General R. Lewer, reports that "in Hong Kong the admissions for ague were 190 less, and for remittent fever 20 more, than in the previous year, and the type of the latter disease was so severe as to occasion 7 deaths, 3 of which took place in men who had been employed in urgent works in the new forts, although the utmost was done to protect their health. In these cases the persistent very high temperature, rapid supervention of cardiac asthenia, and cerebral complication with early death point to an analogy of severity in these attacks with the type of fever existent in former times. With these deaths and the large number of cases admitted from the forts we again have evidence of the habitual effects attending a disturbance of the soil of this island. These fevers prevailed in June, July, August, and September, but were the chief causes of inefficiency throughout the year. July was the worst month. June was unusually wet, the rainfall, 30.93 inches, being the highest for many years past; July was a comparatively dry month, and the effects of heat and moisture on a highly malarious soil were the probable cause of the large amount of sickness in this month. It was universally acknowledged that the last summer was a very trying one, and caused much sickness among the civil population; the officers and subordinates of the Public Works Department suffered severely from malarial fevers contracted while engaged with road making and constructing the Tytain reservoir. In my last report I noted that malarial fevers and a fever of a hybrid type were rife during the autumn in the western district of Hong Kong, and that a medical commission had been appointed to investigate the causes of the outbreak and suggest remedial measures. The conclusions arrived at were:—That the diseases were chiefly malarial, and that the fever epidemic at the time was distinctly so; that fever is endemic in the western district, and that a small per-centage of the cases exhibited symptoms of what may have been sewer gas poisoning. The causes are described as absence of subsoil drainage, earth cutting, absence of cultivation, situation of the houses, insufficient ventilation, imperfect house drainage, and undesirable water supply from Pokfolum, the reservoir being in a malarious locality. The

" water for the troops is from the Tytain waterworks and collecting areas on the hill sides near the barracks, three miles from Pokfolum.

" In the Straits Settlements there were 113 admissions for malarial fevers, 107 being cases of ague, 78 of which were at Fort Canning, a very exceptional occurrence, no case having been recorded there in the previous year, and only two in 1886. These attacks are described as being very mild, and to have happened in men who had been subjected to some exposure under canvas at the outlying forts. The medical officer remarks that this was the first occasion of an encampment on the islands, and that some of the men had suffered from ague in Mauritius. He does not state the number nor distinguish relapses from cases arising *de novo*, but, considering that a battery had recently arrived from such a malarious station as Port Louis, it may not be wrong to attribute very many of the attacks to relapses from exposure. There are strong grounds for this inference in the fact that prior to the arrival of this battery there was almost an utter absence of ague among the artillery, and the men quartered in outlying forts, but accommodated in bungalows, were not only free of ague, but enjoyed a high standard of health. At Tanglin the marked decrease in these fevers noticed in last report has been upheld, 25 cases only having been treated as compared with 53 and 437 in the two preceding years. The medical officer in charge states that the admissions for fevers were most numerous among the occupants of the bungalows overlooking the rifle range and the extensive marshes. The rifle range has been partly drained, but owing to the configuration of its surroundings it is impossible to drain the whole of it effectually. At the shorter distances the ground lies low and filling in is necessary; this has been recommended. Still the great sanitary advantage of the drainage already effected is manifested in the large reduction of admissions from these paludal fevers."

*Septic diseases* are represented by a single case of erysipelas.

In the next sub-group are shown the admissions for venereal diseases. Under the head of *primary syphilis* are returned 62 admissions, equal to a ratio of 26·6 per 1,000, as compared with 31·3 in the previous year. Taking also the admissions for simple venereal ulcer, which amounted to as many as 326, the admission ratio for primary venereal sores equals 166·6 per 1,000, which is above the last year's rate by as much as 103·5, and above the average rate for the preceding five years by 124·0. *Secondary syphilis* caused 85 admissions, the ratio being 36·5 per 1,000, an increase of 7·8 on the rate in the previous year, and greater than the quinquennial average rate by 10·7. *Gonorrhœa* was the cause of 366 admissions, equal to 157·2 per 1,000, which is greater than the previous year's rate by 59·7, and than the average rate by 65·7. Including all forms of venereal disease, the total admission ratio for the whole Command amounted to 360·2 per 1,000, being an increase on the corresponding rate in the previous year by 171·0, and on the average rate for the previous five years by as much as 200·4. The ratio of constant inefficiency from these diseases was 25·63 per 1,000, which is above the rate in the preceding year by 12·25, and above the quinquennial average rate by 14·34 per 1,000.

In the Hong Kong division of the Command alone the admission ratio for primary syphilis was 15·3, and that for simple ulcer 128·1, making a total admission ratio for primary venereal sores of 143·4 per 1,000, the admission ratio for secondary syphilis was equal to 32·2, and that for gonorrhœa to 128·9 per 1,000. The total admission ratio for all forms of venereal disease was 304·6 as compared with 180·7 per 1,000 in the previous year, and the total ratio of constantly sick was 23·39 as compared with 12·22 per 1,000.

In the Straits Settlements, the admission rate for primary syphilis was 39·5 per 1,000, that for simple ulcer being 153·5, making a total for primary venereal sores of 193·0 per 1,000. The admission ratio for secondary syphilis was 41·4, and that for gonorrhœa 189·3 per 1,000. The total admission ratio, including all forms of venereal disease, was 423·7, and that of constant inefficiency 28·19 per 1,000, the former being greater than the corresponding rate in the preceding year by 226·4, and the latter by 13·67 per 1,000.

The Principal Medical Officer remarks that the great inefficiency due to the above diseases is due to the repeal of the Contagious Diseases Acts. The medical officer in charge at Tanglin states that these diseases are still on the increase, and of a more severe type, the proportion of hard sores being greater

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during the last three months of the year; while at Hong Kong the diseases have certainly been more virulent and required a longer detention in hospital for their cure than was the case when the Acts were in force.

In the last sub-group of the first group of general diseases is recorded a fatal case of *hydrophobia*, it is stated that the man was bitten by a dog in South Africa three years before, but the dog was not known to have been mad. There was no history of his having been bitten by any dog since his arrival at Singapore a year before, but he always had dogs about him.

*Parasitic Diseases*.—12 admissions are returned, 10 of which were cases of *tænia solium*, which occurred at Tanglin.

*Alcoholism* caused 14 admissions against 9 in the previous year; 12 were cases of alcoholism, and 2 delirium tremens, all recovered. Singapore furnished 11 of the cases.

*Debility* was the cause of 59 admissions, or 25·3 per 1,000, which is above the corresponding rate in the previous year by 11·6, but is below the average rate of five years. The admissions were chiefly the result of the enervating climate and malaria.

The admissions for *rheumatism* were 37 in number, equal to a rate of 15·9 per 1,000, which is just about the average rate, though higher than that of the previous year by 7·1. The cases included 2 only for rheumatic fever, and call for no special remark.

*Tubercular diseases* caused 7 admissions and 4 deaths, including 2 of invalids, as compared with 16 cases and no deaths in the previous year. All the cases and all the deaths were due to lung affections, 3 of the cases occurred at Hong Kong and 2 at Tanglin and Penang respectively. Other general diseases caused 18 admissions, all cases of non-malignant new growth with the exception of two, a case of anæmia and one of cancer which proved fatal.

*LOCAL DISEASES*.—*Diseases of the Nervous System* caused 13 admissions, and one death. The admission ratio, 5·6 per 1,000, is almost identical with that in the preceding year, but is a good deal below the average rate. Among the admissions were 2 cases of mental disease, 5 of neuralgia, and 4 of paralysis, one of which was fatal.

*Diseases of the Eye* show an admission rate of 9·4 per 1,000, rather below the average rate as well as the last year's rate. Of 22 admissions 17 were at Tanglin; the prevailing disease was conjunctivitis.

*Diseases of other Organs of Special Senses* gave 45 admissions, or 19·3 per 1,000, an increase of 5·6 on the rate in the preceding year, and above the average. The majority of the cases were inflammation of the external meatus, and took place during the hot season; it is probable they were caused by bathing.

*Diseases of the Circulatory System*.—The admissions were 18 in number, or 7·7 per 1,000, which is about half the average rate, though nearly double the rate in the preceding year. The admissions included 7 of valve disease of the heart, 7 of palpitation, one of aneurysm of aorta, &c. Two thirds of the admissions were at Tanglin.

*Diseases of the Respiratory System*, with a ratio of admission of 20·2 per 1,000, were somewhat less frequent than in the preceding year and than the average. Out of 47 admissions, 29 were for bronchitis, 2 for pneumonia, 4 for pleurisy, and 5 for pneumonic phthisis, one of which, at Tanglin, was fatal. Hong Kong, as in previous years, furnished about half the admissions, and all the remainder, except four, were at Tanglin, at which station the medical officer in charge remarks that lung diseases are more prevalent than might be supposed in such a climate, and they seem often to be particularly rapid and fatal in their course, probably owing to the extreme dampness.

*Diseases of the Digestive System* caused 199 admissions into hospital, equal to a ratio of 85·4 per 1,000, which is lower than the corresponding rate in the previous year by 19·6, and is also below the average rate. The decrease was principally in cases of diarrhœa, dyspepsia, and liver congestion. Of the total number of admissions 110 occurred at Hong Kong, mainly from diarrhœa and hepatic affections, including one fatal case of abscess of the liver. Some of the cases of diarrhœa were very obstinate. At Tanglin it was stated that the admissions for dyspepsia and liver affections were in some cases brought on by excessive drinking.

*Diseases of the Lymphatic and Glandular System* caused 57 admissions, or 24·5 per 1,000, rather in excess of the rate in the previous year and above the average. *China and Straits Settlements.*

*Diseases of the Urinary Organs* were somewhat more prevalent than in the previous year, the admission ratio, 5·2 per 1,000, showing an increase of 1·2. The Principal Medical Officer mentions that the older residents in Hong Kong suffer a good deal from bladder affections, sub-acute cystitis being common in civil life. He states also that a form of hæmaturia is also met with in which blood is passed for a period varying from one to three or four days, when it quickly disappears leaving the urine clear. He thinks this a manifestation of malarial poisoning.

*Diseases of the Generative System* caused a very large admission rate, 164·9 per 1,000, an increase of 97·4 on that in the previous year. This, of course, is due to the great prevalence of simple venereal ulcers, as many as 326 admissions out of a total of 384 being returned.

*Diseases of the Organs of Locomotion* gave a ratio of 12·5 per 1,000, an increase of 8·5 on the preceding year, and *diseases of the connective tissue* gave a ratio of 25·8, an increase of 4·2, but rather below the average.

*Diseases of the Skin* caused 150 admissions, equal to 64·4 per 1,000, slightly below the corresponding rate in the previous year and below the average. Boils, ulcers, whitlows, eczema, and ringworm were the chief causes of admission, the last-named chiefly at Tanglin.

*Poisons.*—One admission is returned; this was a case of attempted suicide by oxalic acid at Penang, but the man received prompt treatment and recovered.

*Injuries.*—283 admissions and 9 deaths are returned, equal to ratios of 121·5 and 3·86 per 1,000 respectively, which are greater than the corresponding rates in the preceding year by 26·2 and 2·10. Ten of the admissions were for general injury, and there were 5 deaths; 8 were cases of sunstroke and the other 2 heat apoplexy. 6 cases of sunstroke and 1 death occurred at Fort Canning; 2 cases of sunstroke and one of heat apoplexy at Tanglin, and one case of heat apoplexy, fatal, at Hong Kong. There were two deaths from drowning at Fort Canning; one, accidental, resulted while bathing, but in the other case a verdict of "found drowned" was returned. There was also one death at Penang by hanging, suicidal, but no motive for the act is recorded, and a verdict of temporary insanity was given. Local injuries caused 273 injuries and 4 deaths. At Hong Kong there were 93 admissions, of which 81 were contusions, wounds, or sprains, among the remainder the more important were 2 cases of fracture of the base of the skull, fatal, by falling from a verandah; one of contusion with rupture of viscera from a fall over a precipice, fatal, and one of concussion of the spinal cord from a fall from a verandah, which remained under treatment at the close of the year. At Tanglin there were 152 admissions of an ordinary character generally; the most important were a case in which the knee joint was opened by a fall on duty, and one, fatal, of compound fracture of the skull, a man being found dead in the Albert Graving Dock at Singapore, but nothing satisfactory could be ascertained as to the circumstances attending this death. It is remarked that out of 43 cases of blisters of the feet in the Command, 42 occurred at Tanglin. The medical officer attributes this in great measure to badly fitting or unmended socks, and when this was discovered it was brought to notice with good result. Concerning 18 admissions at Fort Canning and 10 at Penang, no special mention is required.

*Invaliding.*—The number of men invalided home during the year was 40, equal to a ratio of 17·18 per 1,000, which is higher than the ratio in the preceding year by 2·18, but lower than the average rate for the preceding 10 years by 20·59. The proportion of invaliding in each division of the Command was, Hong Kong 32 cases, or 25·78 per 1,000, and Straits Settlements 8 cases, or 7·35 per 1,000. With regard to corps, the invaliding rate for artillery was 18·87 per 1,000, being below the corresponding rate in the previous year by 5·11; the battery showing the highest ratio, 40·40 per 1,000, was the 5th of the 1st Brigade, Eastern Division, at Hong Kong. The invaliding rate in the infantry was 17·48 per 1,000, an increase of 5·05 on the last year's rate. The Northamptonshire Regiment at Hong Kong caused most invaliding, 26 cases

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or 29.98 per 1,000. Taking the ages at which invaliding occurred, it is found that the ratio of men under 20 years was 18.18 per 1,000, but dependent on one case only, that of men between 20 and 25 years was 10.53, due to 14 invalids, that of men in the next quinquennium 24.42, due to 16 invalids, and that of men over 30 years of age, 31.14 per 1,000, dependent on 9 cases. Compared with corresponding results in the preceding year an increase is observed in each of the first three ratios, but a decrease in the last. According to length of service in the Command it is found that invaliding took place in 7 instances in the first year, equal to 10.82 per 1,000, in 3 instances in the second year, equal to 3.51 per 1,000, in as many as 25 instances in the third year of service, or 36.60 per 1,000, and in 5 instances over three years' service, or 34.72 per 1,000. Compared with similar results in the previous year the invaliding ratio in the second year of service declined a great deal, but in all other years an increase is observed. The principal causes of invaliding were malarial fevers 9 cases, equal to 3.86 per 1,000, tubercular diseases 7 cases, or 3.00 per 1,000, both of these ratios are increased as compared with the foregoing year, debility 5 cases, or 2.15 per 1,000, and diseases of the circulatory and respiratory systems 3 cases each.

The number of men finally discharged by invaliding was 19, being in the ratio of 8.16 per 1,000, which is higher than the corresponding ratio in the preceding year by 1.98, but lower than the decennial average rate by 8.50 per 1,000. The principal disabilities necessitating discharge were tubercular disease of the lungs 4 cases, debility 3 cases, ophthalmic and aural affections of each 2 cases, respiratory affections 2 cases, including one case of pneumonic phthisis, aortic aneurysm one case, &c.

*Officers.*—The average strength was 98, and there were 89 attacks of illness and three deaths, being in the ratios of 908.1 and 30.61 per 1,000, which are higher than the corresponding ratios in the previous year by 508.1 and 9.56 respectively. Three officers were invalided, equal to 30.61 per 1,000, a decline of 32.55. The chief causes of sickness were fevers, principally malarial, diseases of the digestive system and injuries. One officer was attacked with small-pox at Hong Kong. Invaliding was due to ague, remittent fever, and sclerosis of posterior columns of spinal cord one case respectively. There were 2 deaths at Hong Kong, one from remittent fever, and the other from drowning, due to the upsetting of a boat, the third death was at Fort Canning from partial dislocation of spine without fracture occasioned by a fall from a verandah.

*Women.*—The average strength was 90, and the admissions were 92, being in the ratio of 1022.2 per 1,000, an increase of 90.2 over the previous year's rate. The principal causes of admission were debility, malarial fevers, and diseases of the digestive system. One death occurred at Tanglin from accidental poisoning by hydrocyanic acid.

*Children.*—The average strength was 152, and there were 190 admissions and 5 deaths, being in the ratios of 1250.0 and 32.89 per 1,000, the former being higher than the corresponding rate in the previous year by 687.1 and the latter lower by 20.09. 40 cases of remittent fever, 31 of bronchitis, and 56 of diarrhoea were the most important diseases treated. The deaths were caused by remittent fever, anæmia, convulsions, diarrhoea, and asphyxia by overlying one case respectively.

*Sanitary Conditions.*—The Principal Medical Officer points out that during the year the health of the troops was very materially affected by malarial fevers and by the repeal of the Contagious Diseases Acts. These influences are, however, "ab extra," and not dependent upon faulty hygienic conditions within the barracks. He states that the sanitary condition of barracks throughout the Command was satisfactory.

At Hong Kong "a scheme has been sanctioned for reclaiming from the harbour a large tract of ground of an average width of 250 feet running along the whole of the northern part of the European and Chinese quarters of the city which will, when effected, add to the area some 26 acres of land; this work will also extend along the frontage of the North and Wellington barracks. The earth for filling in is to be brought from sparsely inhabited districts at a considerable distance from the city, and it is thereby hoped that the ill-effects which follow the disturbance of the disintegrated granite

soil will be minimized. The new water supply from Tytain will do much to improve the health of the Colony as a higher standard of cleanliness and better flushing of sewers may be expected. The works are completed and the laying of the street mains, now in progress, will shortly place the city in the enjoyment of an ample water supply, and the troops are also to be supplied from this source. The laying on of this water to the garrison will effect a saving of about 200*l.* a year now expended in fuel for boiling drinking water, as its collecting area is exposed to the risk of pollution. The important question of improved drainage for this Colony has received consideration and a scheme has been submitted."

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The hospital accommodation was the same as in previous years, but the building of a hospital of 200 beds is in contemplation. It will be situated on the spur of a hill above the Kennedy Road and behind the barracks, the site comprises an area of nearly seven acres. In so limited a selection of building ground the proposed site is a good one. The elevation of the spur, the very large extent of free space on all sides, and its situation as regards the barracks are marked advantages. An excellent water supply is said to be at hand from the aqueduct of the Tytain waterworks, which runs at a higher level within a few yards of this site.

Among the sanitary improvements at Hong Kong may be mentioned the cementing of a nullah near the Victoria barracks to the extent of 500 feet. Much sanitary advantage is said to have resulted as malarial fevers, which were very prevalent in the adjacent barracks, have lessened.

The sanitary conditions at the stations in the Straits Settlements are generally reported to be satisfactory; but some few improvements were necessary, and were carried out during the year. Among them were, at Penang, an increase in the provision of latrine accommodation for men, and improvements in latrine arrangements. Some quarters for officers have also been erected. At Tanglin a disinfecting chamber, erected two years back, was found to be unsatisfactory in its working, and in order to remedy the defect certain alterations were made, but not yet with very satisfactory result. It is recommended that water should be laid on to the barracks from the Singapore waterworks, and this measure is said to have every prospect of success. Atkin's patent filters were introduced both at Tanglin and Fort Canning, replacing the old chatty filters formerly used.

## II.—ASIATIC TROOPS.

The force consisted of Gun Lascars at Hong Kong, and a detachment of them at Fort Canning, Singapore, at which place also was a company of the recently formed Eastern Battalion Royal Engineers. The average strength of these troops was 242, the admissions into hospital were 164, there were 5 deaths, and one man was discharged the service as an invalid. The admission ratio, 677·7 per 1,000, was greatly decreased as compared with the preceding year, and the death rate, 20·67 per 1,000, slightly so. At Hong Kong, in an average strength of 178, there were 143 admissions, 5 deaths, and constantly sick 5·00 men. At Fort Canning the health was very good, the admissions were 21 in an average strength of 64 and the average daily sick 1·00.

The chief causes of sickness in the Command were malarial fevers, venereal diseases, digestive disorders, and injuries. Debility is returned as the cause of 2 deaths, diarrhoea 2, and valve disease of the heart one death.

As compared with the preceding year, a large reduction in malarial fevers at Hong Kong is observed, 64 cases only having occurred against 224. This improvement is due to a much smaller number of men being employed in the new forts, their frequent relief, and to less disturbance of the soil as the forts approach completion.

## XII.—ON THE HEALTH OF THE TROOPS SERVING IN INDIA.

*Sickness and Mortality.**India.*

The average strength of the warrant officers, non-commissioned officers and men in India was 68,139 (exclusive of those on field service in Upper Burma); the admissions into hospital were 94,489; and the deaths 1,036, of which 1,006 took place in India, and 30 (being those of invalids) on the passage to or after arrival in England. The average number of constantly sick was 4929·61. The rates from these numbers are, for admissions 1386·7, for deaths 15·20, and for constantly sick 72·34 per 1,000 of the strength.

The sickness for each of the three Commands is shown in the following table:—

| —                                | Average Annual Strength. | Admitted into Hospital. | Deaths.   |                |        | Inva- lids sent Home. | Inva- lids dis- charged the Service. | Average con- stantly Sick. |
|----------------------------------|--------------------------|-------------------------|-----------|----------------|--------|-----------------------|--------------------------------------|----------------------------|
|                                  |                          |                         | In India. | Of In- valids. | Total. |                       |                                      |                            |
| Bengal - -                       | 42,141                   | 59,141                  | 647       | 16             | 663    | 869                   | 496                                  | 3032·30                    |
| Madras - -                       | 14,073                   | 18,094                  | 220       | 7              | 227    | 392                   | 187                                  | 1081·17                    |
| Bombay - -                       | 11,923                   | 16,354                  | 139       | 7              | 146    | 296                   | 165                                  | 816·14                     |
| Total - -                        | 68,139                   | 94,489                  | 1,006     | 30             | 1,036  | 1,557                 | 847                                  | 4929·61                    |
| Ten years, 1878 }<br>—87 - - - } | 566,020                  | 867,252                 | 9,137     | 535            | 9,672  | 18,232                | 8,698                                | 38871·00                   |

*continued.*

| —                                | Ratio per 1,000 of Mean Strength. |       |                   |                          |                    | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. |
|----------------------------------|-----------------------------------|-------|-------------------|--------------------------|--------------------|------------------------------------|--------------------------------------------|
|                                  | Ad- mitted.                       | Died. | Inva- lided Home. | Inva- lids dis- charged. | Con- stantly Sick. |                                    |                                            |
| Bengal - -                       | 1403·4                            | 15·73 | 20·62             | 11·74                    | 71·96              | Days. 26·34                        | Days. 18·77                                |
| Madras - -                       | 1349·7                            | 16·13 | 27·85             | 13·23                    | 76·81              | 23·11                              | 20·83                                      |
| Bombay - -                       | 1371·4                            | 12·24 | 24·82             | 13·84                    | 63·43              | 25·05                              | 18·26                                      |
| Total - -                        | 1396·7                            | 15·20 | 22·85             | 12·43                    | 72·34              | 26·40                              | 19·04                                      |
| Ten years, 1878 }<br>—87 - - - } | 1532·2                            | 17·09 | 32·21             | 15·36                    | 69·67              | 25·06                              | 16·36                                      |

## I.—BENGAL.

The average strength of the troops serving in the Bengal Command during the year 1888 was 42,141 warrant officers, non-commissioned officers and men. The principal statistics of the sickness and mortality among these troops are shown in the subjoined table :—

| 1888.<br>Average<br>Strength. | Admissions. | Deaths.            |              |        | Invalids.  |                        | Average<br>daily<br>Sick. | Ratios per 1,000 of Strength. |         |                        |                                      |                               |
|-------------------------------|-------------|--------------------|--------------|--------|------------|------------------------|---------------------------|-------------------------------|---------|------------------------|--------------------------------------|-------------------------------|
|                               |             | In the<br>Command. | Of Invalids. | Total. | Sent Home. | Finally<br>discharged. |                           | Admissions.                   | Deaths. | Invalids<br>sent Home. | Invalids<br>finally dis-<br>charged. | Average con-<br>stantly Sick. |
| 42,141                        | 59,141      | 647                | 16           | 663    | 869        | 406                    | 3032·30                   | 1403·4                        | 15·73   | 20·62                  | 11·74                                | 71·96                         |

Compared with the corresponding ratios for the preceding year it is observed that the admission rate was almost the same, a fractional decrease, '4 per 1,000 only having occurred; the death rate also shows a fractional difference, an increase of '73, while in the rate of constantly sick an increase of 2·31 has occurred. In comparison with similar average ratios for the preceding 10 years there is a decrease in the ratio of admission equal to 207·8 per 1,000, and one in the ratio of mortality equal to 2·39, but in the ratio of constant inefficiency through sickness there is an increase of 1·69 per 1,000.

The average sick time to each soldier was 26·34 days, and the average duration of each case of sickness 18·77 days. Compared with corresponding periods in the previous year the average sick time to each soldier was longer by '92 of a day, and the average duration of each case of sickness by '66 of a day, and compared with similar average periods for the preceding 10 years the former was longer by '68 of a day and the latter by 2·84 days.

The loss to the Command by death and invaliding to England was 1,516, or 35·97 per 1,000, as compared with 33·67 in the previous year; and the loss to the army by death and final discharge as medically unfit among troops belonging to the Bengal Presidency was 1,158 men, or 27·48 per 1,000, an increase on the corresponding ratio in the preceding year of 1·58.

In Abstracts XV. and XVI. are tables, taken from the report of the Principal Medical Officer, Surgeon General W. A. Thomson, which show the principal statistics of sickness and mortality in the different administrative divisions and districts, and also in the various stations in the Command.

As in the previous year the highest ratio of admission in any district was in that of Gwalior, and reached 2599·3 per 1,000; this was mainly due to the prevalence of malarial fevers, and also to that of venereal affections. Next to the above was the admission ratio in the Peshawar circle, which reached 1792·7. Here also the high ratio was principally due to the prevalence of malarial fevers, though other continued fevers, dysentery, &c. also contributed. The lowest ratio of admission in any circle was 1152·1 per 1,000 in Quetta, the next above being 1185·4 in the Sirhind district, and 1204·0 in Oudh. Compared with corresponding results in the preceding year the admission ratios have increased in five districts, in the Peshawar circle by as much as 421·5, in the Rawal Pindi circle by 253·6, and in the Gwalior circle by 246·2. Among the instances of decrease the most marked were 180·9 in the Lahore circle and 159·6 in the Quetta district. The highest ratio of mortality in any district was 30·82 per 1,000 in Gwalior, partly due to deaths from enteric fever and dysentery; the next ratio was in the Rawal Pindi district, 26·87, and was increased by an epidemic of cholera; the lowest death rate was in the Oudh division, 10·46, the next above being 10·82 in the Saugor district, and 11·02 in the Sirhind division. In the Gwalior and Rawal Pindi



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districts the mortality rates increased by 6·74 and 15·39 respectively; increase was also observed in the Quetta, Meerut, and Presidency districts, but to a less extent; of the districts where mortality decreased, the most, 9·69, was in the Saugor district.

Of stations in the plains having an average strength of over 150 men, Delhi gave the highest admission ratio, 2806·7 per 1,000, higher than in the previous year by 237·7, but lower than the average of the 10 preceding years by 654·9. This high sick rate is due to the excessive prevalence of ague. Jhansi gave the next highest admission ratio, 2724·8 per 1,000, but little below that of Delhi, and was higher than the corresponding rate in the preceding year by 420·1, and than the decennial average rate by 812·6; here also malarial fevers were the principal causes of sickness. High admission ratios are also observed at the following stations, Fort Lahore, 2160·0, which, however, is lower than in the previous year and below the average rate; Peshawar, 2152·0, below the average rate, but in excess of that of the previous year; Nowgong, 1,990·6, an increase on the ratios in preceding years; and Mean Meer 1957·2, but this is a good deal below the decennial average rate as well as below the rate in the previous year. At Amritsar, where in the previous year the ratio of admission was 2615·4 per 1,000, on account of the prevalence of malarial fevers, there was much less sickness, said to be due to improvements in drainage and general sanitation, and the ratio of sickness only reached 1670·8, a decrease of as much as 944·6. The lowest admission ratio was 1076·5 per 1,000 at Sialkot, which differs very slightly from the rate in the previous year and is below the decennial average rate by 427·5. Next above came Lucknow with 1088·4, below the last year's rate as well as the average, and Umballa with 1097·1, also below the average rate and that in the preceding year; Quetta and Mooltan have low ratios of admission also, 1152·1 and 1157·6 respectively, which compare favourably with rates in foregoing years.

At hill stations where the strength averaged over 150 men the highest admission rate was 2636·8 per 1,000 at Camp Thobba, considerably in excess of the rate in the previous year and of the average rate. Naini Tal gave the next ratio, 1633·3 per 1,000, a decrease of 763·7 from the preceding year's rate, though compared with the decennial average it showed an increase of 97·2. Murree and Chakrata came next with ratios very similar to each other, 1535·8 and 1533·8 respectively; both are higher than in the previous year, but the former is below and the latter above the corresponding average rate. The admission ratios at Dalhousie and Kasauli were also very similar, 1345·7 and 1334·3, and are both considerably below average rates as well as below those in the previous year. The lowest ratio at a hill station was 642·4 per 1,000 at Gharial, and it was below the last year's rate by 77·7 and the average rate by 292·0. Next above were Solon and Dagshai, with 824·6 and 965·2 respectively; these were both a good deal below average rates, but were above the corresponding ratios in the preceding year. At Darjeeling there was a marked improvement, the admission ratio having fallen from 1286·8 in the previous year and an average rate of 1127·0 to 1000·0 in the year under review. Cherat also, with an admission rate of 1125·7, was more healthy than the average of former years, but not so much so as in the preceding year, when the rate only reached 817·7.

With regard to mortality at stations in the plains having an average strength of 150 and upwards, it is observed that the highest death rate, 34·91 per 1,000, occurred in Jhansi; it is in excess of that in the previous year by 9·52, and more than double the decennial average rate. It is said that this increased mortality was due to enteric fever and dysentery. The next mortality rate was 32·58 at Rawal Pindi, due chiefly to cholera; it is three times the rate in the previous year, and considerably more than double the average rate. High mortality ratios occurred also at Dinapore, 25·76, Fategarh, 25·00, and Cawnpore, 23·26; all of the ratios show an increase over the decennial average rates and over the corresponding rates in the preceding year. The lowest ratio of mortality at any station was 2·88 at Barrackpore, much below the rate in the previous year and less than a fourth of the average ratio. Fyzabad, with a ratio of 4·52, showed a marked decrease of mortality, the rate in 1887 having been 13·79, and the average rate 19·89. Bareilly, with the comparatively low death rate of 7·07, also showed a marked decrease in both these

comparisons, but not to so considerable an extent as in the last-named station. *Bengal.* In Nowgong the ratio was 7·08, a marked decline, for in the preceding year this station gave the highest death rate in the Command, 34·14; it is also less than half the average rate. There were also low death rates at Delhi, 7·44, Jullunder, 8·09, and Saugor, 8·24; all these compare favourably with corresponding rates in the previous year and with average rates.

With regard to mortality at hill stations, the death rate at Murree, 101·89 per 1,000, is enormously in excess of the corresponding rate in any preceding year; this was owing to a severe outbreak of cholera. The next ratio was 31·89 in Gharial, and was also principally due to cholera; the rates in previous years were very low in comparison. Jutogh caused a rate of 21·66, as compared with 13·39 in the previous year, and an average rate of 8·32.

The rate at Naini Tal was 19·05, about the average rate, but less than half the rate in 1887. At Kuldunnah the ratio, 18·78, is a good deal in excess of the average as well as of the last year's rate. The hill station giving the least mortality was Cherat, the death rate being only 3·70 per 1,000, having fallen from 26·32 in the previous year, and being below the average rate of nine years by 13·95. The next lowest rate was 5·67 at Kasauli, a decline of 6·03 from the last year's rate, and less than a third of the average rate. At Camp Thobba the death rate was 8·97 as compared with *nil* in the preceding year. At Dalhousie there was a mortality ratio of 9·29, which is above the decennial average ratio by 1·10, but is below the corresponding rate in the previous year by 3·97. At Dagshai the death rate, 10·44, also shows a decline, but it is only 1·31 below the average rate, and only fractionally below the rate in 1887.

In Abstract XL is a table taken from the report of the Principal Medical Officer which gives the more important of the health statistics of the different arms of the service as well as of the several corps which served in the Command during the year.

In the cavalry the average strength is returned as 3,685, and there were 4,968 admissions into hospital, 62 deaths in the Command, and 275·76 men constantly sick. The admission ratio, therefore, was 1348·2, the death rate 16·82, and the constantly sick rate 74·83 per 1,000. Compared with corresponding results in the preceding year a decrease of 186·0 has occurred in the ratio of admission, but there is an increase of 2·40 in the ratio of mortality, and one of 2·49 in that of constantly sick. The average sick time to each man was 27·39 days, which is longer by about a day than the corresponding period in the previous year, and the average duration of each case of sickness was 20·32 days, an increase of over three days.

In the artillery the average strength was 6,709, the admissions were 9,988, the deaths 133, and the number constantly sick 476·93. The admission ratio was therefore 1,488·7, the death rate 19·82, and the constantly sick rate 71·09 per 1,000. Compared with the return for the preceding year all these ratios show a slight increase, 32·8, 2·92, and 1·19 per 1,000 respectively. The average sick time to each soldier was 26·02 days, longer than in the previous year by about half a day, and the average duration of each case of sickness was 17·48 days, which is almost identical with the corresponding period in 1887.

In the infantry, with an average strength of 30,280, there were 42,955 admissions into hospital, 421 deaths, and 2165·80 men constantly sick. Compared with corresponding results in the preceding year the ratio of admission, 1418·6 per 1,000, differs only by an increase of 12·7, the death ratio, 13·90, by an increase of ·11, and the constantly sick rate, 71·53, by an increase of 1·42. The average sick time to each soldier, 26·18 days, was longer by about half a day, and the average duration of each case of sickness by a quarter of a day than the corresponding period in the previous year.

With regard to the amount of sickness and mortality in individual corps, it is observed of the regiments of cavalry (excluding the 6th Dragoon Guards, which was only a few days in the Command) that the highest admission rate was 1882·3 per 1,000 in the 1st Dragoon Guards quartered at Rawal Pindi. The highest death rate was in the same corps, 48·39 per 1,000, and was due to an outbreak of cholera. The 3rd Dragoon Guards, chiefly at Muttra, gave the next admission rate, 1733·8 per 1,000, but the next death rate was in the 8th Hussars at Meerut, 17·36 per 1,000. The lowest admission ratio was 1028·0

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in the 17th Lancers quartered at Lucknow, next above being 1029·8 in the 7th Dragoon Guards at Umballa for the greater part of the year. The lowest annual death rate, 4·97 per 1,000, was in the last-named regiment, the next above being 7·56 in the 2nd Dragoon Guards stationed at Sialkot for the last nine months of the year, and previously at Umballa. The highest ratio of constant inefficiency through sickness was 103·50 per 1,000 in the 3rd Dragoon Guards, and the next, 91·96, in the 8th Hussars; the lowest ratios were 56·49 and 58·74 in the 17th Lancers and 2nd Dragoon Guards respectively.

The number of batteries of artillery was 55, but three of these were only a short time in the Command. Omitting them, the highest ratio of admission is observed to have been 3287·2 per 1,000 in No. 7 Battery, 1st Brigade, Scottish Division, stationed at Jhansi; the next being 3029·1 in No. 8 Battery, 1st Brigade, Scottish Division, at Delhi, and 2925·9 in No. 2 Battery, 1st Brigade, Eastern Division, some time at Delhi, Roorkee, and Chakrata; the lowest ratios of admission were in the following batteries of Royal Horse Artillery: D Battery, A Brigade, at Sialkot, 727·9 per 1,000; G Battery, A Brigade, at Umballa, 746·8; and K Battery, B Brigade, also at Umballa, 837·3 per 1,000.

The highest ratio of mortality in any battery was 96·39 per 1,000 in No. 5 Battery, 1st Brigade, Southern Division, at Rawal Pindi for nearly 10 months; the next was 51·61 in N Battery, 3rd Brigade, also at Rawal Pindi, where as mentioned above an outbreak of cholera occurred; and high death rates are also observed in L Battery, 3rd Brigade, at Peshawar, and No. 1 Battery, 1st Brigade, Welsh Division, at Roorkee, 48·48 and 48·19 respectively. In seven batteries there was no mortality, and among those with low ratios may be mentioned L Battery, 4th Brigade, at Fyzabad, 6·17 per 1,000; K Battery, 3rd Brigade, at Mean Meer, with a detachment at Dalhousie, 6·49; O Battery, 4th Brigade, also at Mean Meer, with a detachment at Dalhousie, 6·54; and G Battery, 1st Brigade, partly at Cawnpore and partly at Ferozepore, 6·67. The highest ratio of constant inefficiency through sickness was 175·74 per 1,000 in No. 2 Battery, 1st Brigade, Eastern Division, next 136·27 in A Battery, 1st Brigade, at Cawnpore, and 117·52 in N Battery, 2nd Brigade, at Allahabad; the lowest ratio was 6·18 in No. 9 Battery, 1st Brigade, Northern Division, at Darjeeling and then at Sikkim; this low rate is said to have been probably due to the weakly men having been left behind when the battery went on service; there were also low ratios of constantly sick in D Battery, A Brigade, and K Battery, B Brigade, Royal Horse Artillery, 37·82 and 38·86 respectively.

In the infantry, excluding two regiments which returned from active service in Burma quite at the end of the year, the 1st Battalion Rifle Brigade and the 2nd Battalion Royal Munster Fusiliers, the highest admission ratio in any corps was 2222·6 per 1,000 in the 2nd Battalion Devonshire Regiment stationed at Jhansi, with a wing at Nowgong; the next ratio was 2220·5 in the 2nd Battalion Lincolnshire Regiment at Meerut and Chakrata, followed by 2115·4 in the 1st Battalion Royal Irish Fusiliers, at Peshawar and Cherat; the lowest admission ratio was 775·4 per 1,000 in the 2nd Battalion Royal Sussex Regiment stationed part of the year at Rawal Pindi, and part at Gharial in the hills; next above was 844·5 in the 2nd Battalion Royal Scots Fusiliers at Umballa and Dagshai, and 898·0 in a detachment of the 2nd Battalion Cheshire Regiment at Dagshai. Mortality was highest in the 1st Battalion Suffolk Regiment at Rawal Pindi and Topa chiefly, the ratio being 30·49 per 1,000, due greatly to cholera, followed by 27·75 in the 4th Battalion Rifle Brigade at Dinapore; the next ratio was 25·91 in the 2nd Battalion Royal Lancaster Regiment, a short time in Quetta, and then 23·86 in the 2nd Battalion Northumberland Fusiliers at Rawal Pindi and Kuldungh; the lowest death rate was 4·74 in the 2nd Battalion Royal Scots Fusiliers, next 5·12 in the 1st Battalion Connaught Rangers at Jullundur, and 5·49 in the 2nd Battalion Seaforth Highlanders at Bareilly for eight months, and afterwards at Rawal Pindi. The greatest amount of constant inefficiency through sickness was in the 1st Battalion Leinster Regiment at Calcutta, the ratio being 120·14 per 1,000; the next ratio was 114·61 in the 2nd Battalion Lincolnshire Regiment, followed by 96·01 in the 1st Battalion Royal Welsh Fusiliers quartered at Lucknow; the lowest ratio was 33·03 in the 2nd Battalion Royal Sussex

Regiment, the next above being 39·24 in the 2nd Battalion Royal West Surrey Regiment at Umballa, and 44·35 in the 4th Battalion Rifle Brigade. *Bengal.*

The following tables have been prepared to show the influence of age and of length of service in the Command on sickness and mortality among the troops :—

TABLE showing the Influence of Age on the Sickness, Mortality, and Invaliding among the Troops in the Bengal Command, during the year 1888.

| Ages.                 | Average Strength. | Admissions. | Deaths. | Invalidated. | Ratios per 1,000 of Strength. |            |             |
|-----------------------|-------------------|-------------|---------|--------------|-------------------------------|------------|-------------|
|                       |                   |             |         |              | Admissions.                   | Mortality. | Invaliding. |
| Under 20 years -      | 1,548             | 2,359       | 10      | 5            | 1523·9                        | 6·46       | 3·23        |
| From 20 to 24 years - | 18,993            | 31,552      | 312     | 377          | 1661·2                        | 16·43      | 19·84       |
| " 25 „ 29 „ -         | 13,902            | 19,807      | 212     | 322          | 1429·1                        | 15·25      | 23·16       |
| " 30 „ 34 „ -         | 4,648             | 4,020       | 72      | 96           | 829·2                         | 14·85      | 19·80       |
| " 35 „ 40 „ -         | 1,955             | 1,046       | 28      | 46           | 535·0                         | 14·32      | 23·53       |
| " 40 upwards -        | 554               | 279         | 13      | 23           | 503·6                         | 23·46      | 41·53       |
| Not stated -          | 541               | 18          | —       | —            | —                             | —          | —           |
| Total -               | 42,141            | 59,141      | 647     | 869          | 1403·4                        | 15·35      | 20·62       |

The highest admission ratio at any age was 1661·2 per 1,000 among men between 20 and 25 years of age, it is however below the corresponding ratio in the preceding year (which was also the highest ratio in that year) by 182·0. In the next quinquennial period the admission rate decreased to 1429·1, and still more in the succeeding period; this was also the case in the preceding year. Compared with the last return there is an increase of 78·9 in the admission ratio among men between 25 and 30 years of age, but there is a decrease of sickness in each period among men above that age. The admission ratio of men under 20 years of age shows a marked increase, one of 881·0 per 1,000. Mortality was not great among men under 20 years of age, but the ratio rose considerably among men between 20 and 25 years of age, gradually declining through the succeeding quinquennial periods of age until the period over 40 years, when it again increased. Compared with corresponding ratios in the preceding year there is a decline in the death rate of men under 20 years, and in that of men between 35 and 40 years. In all other quinquennial periods of age the mortality rate is increased, but not to any extent, except in the case of men over 40 years, when the increase equalled 13·07.

TABLE showing the Influence of Length of Service in the Country on the Sickness, Mortality, and Invaliding among the Troops in the Bengal Command, during the year 1888.

| Years of Service in the Country. | Average Strength. | Admissions. | Deaths. | Invalidated. | Ratios per 1,000 of Strength. |            |             |
|----------------------------------|-------------------|-------------|---------|--------------|-------------------------------|------------|-------------|
|                                  |                   |             |         |              | Admissions.                   | Mortality. | Invaliding. |
| Under 1 year -                   | 5,550             | 7,313       | 106     | 48           | 1317·7                        | 19·10      | 8·65        |
| From 1 to 2 years -              | 7,394             | 10,621      | 107     | 96           | 1436·4                        | 14·47      | 12·98       |
| " 2 „ 3 „ -                      | 6,988             | 11,254      | 129     | 160          | 1610·5                        | 18·46      | 22·90       |
| " 3 „ 4 „ -                      | 6,306             | 8,946       | 70      | 149          | 1555·0                        | 10·94      | 23·30       |
| " 4 „ 5 „ -                      | 4,457             | 6,686       | 71      | 105          | 1500·1                        | 15·63      | 23·56       |
| " 5 „ 10 „ -                     | 9,524             | 12,107      | 138     | 254          | 1271·2                        | 14·49      | 26·67       |
| " 10 upwards -                   | 1,291             | 1,196       | 26      | 57           | 926·4                         | 20·14      | 44·15       |
| Not stated -                     | 541               | 18          | —       | —            | —                             | —          | —           |
| Total -                          | 42,141            | 59,141      | 647     | 869          | 1403·4                        | 15·35      | 20·62       |

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The admission ratio of men in their first year of service in the country was, it is observed, 1317·7 per 1,000, in the second year of service it increased considerably, and still further in the third year of service, reaching 1610·5, the highest ratio (in the last return the highest rate was in the second year of service); after this a decrease occurred in the fourth and fifth years of service, continued in the quinquennial period of five to ten years, and further over that time. Compared with the last report a considerable decrease is observed in the admission ratios of men in their first and second years of service, amounting to 436·6 and 377·5 respectively; in all other years there was an increase, the most marked being 227·0 in the fourth year of service, 267·5 from five to ten years, and 172·3 over ten years' service. Mortality, as in the previous year, was high among men in their first year of service in the country, the ratio being 19·10 per 1,000, among men in their second year the ratio fell considerably, rising again among men in their third year, falling again lower among men in their fourth year of service. Compared with the results in the preceding year there is a decline in the death rates of men in their first, second, and fourth years of service, but an increase in the remaining mortality ratios.

In Abstract XIV. will be found the admissions, deaths, invaliding, &c. in the different groups and orders of diseases, and in Abstract XV. the prevalence of sickness and mortality from the various orders of diseases in each of the administrative circles of the Command.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—Under the head of *eruptive fevers*, 109 admissions are recorded; of these, 78 were cases of *small-pox* (exactly double the number in the previous year). The admission ratio for small-pox was 1·9 per 1,000, as compared with 1·0 in the preceding year, and with an average rate of 1·1 for the previous five years. The greatest number of cases occurred at Lucknow, 32 with 5 deaths; it is stated that all the men had been re-vaccinated, and the cases varied from being very mild to severe and confluent. At Mooltan, 10 cases occurred, all the men had been re-vaccinated, and nine of the cases were modified, but one, which proved fatal, was confluent. At Meerut, 8 men were attacked, all of whom had been re-vaccinated, and all the cases were mild. Of the remaining cases, 4 occurred at Rawal Pindi, 3 each at Nowshera and Sitapur, 2 at Kuldanna, Jullundur, Muttra, Jhansi, and Jubbulpore respectively, with one death at the last-named place; one each at Fort William, Cawnpore, Bareilly, Nowgong, Agra, Peshawar, and Umballa (fatal), and one case occurred among troops on the line of march. Other eruptive fevers caused 31 admissions, as compared with 143 in the preceding year, this is owing to the decreased prevalence of dengue, 121 cases of which occurred in 1887, while in the year under report there were only 13. There were 10 admissions for measles, of which 9 happened at Quetta and one at Chakrata. The remaining admissions for eruptive fevers comprised 5 for epidemic rose rash (4 at Allahabad), 2 for chicken-pox, and one for cow-pox.

*Enteric fever* caused 686 admissions and 177 deaths, equal to ratios of 16·3 and 4·20 per 1,000 respectively. Compared with the corresponding ratios in the preceding year there is an increase of 3·2 in the admission rate, and one of 1·14 in the death rate, and compared with average ratios for the preceding five years the former is increased by 2·5 and the latter by 26. The constantly sick rate, 2·20 per 1,000, was higher in both these comparisons by 45 and 42 respectively. The per-centage of mortality to attack was 25·8 as compared with 30·8 in the previous year, and with a quinquennial average of 28·5. In Abstract XVII. will be found a table, taken from the report of the Principal Medical Officer, showing the stations at which the admissions and deaths from enteric fever took place in each of the four quarters of the year. The greatest number of cases occurred in the second quarter of the year, the next in the third, then in the fourth, and least in the first quarter. This corresponds with the order of prevalence observed in the preceding year. Mortality also was in the same order, being highest in the second quarter and least in the first, but in the previous year the third quarter gave the greatest number of deaths. Mortality to attack was 27·5 per cent. in the second quarter, 27·4 in the fourth, 25·9 in the third, and 18·2 in the first quarter

As in the previous year, all the districts and divisions were more or less affected with the disease, and in 55 out of the 66 stations in the Command there was at least one admission, and in only 10 out of the stations attacked was there no death from this disease. The greatest prevalence of enteric fever in any district was in Rohilcund, the ratio being 35.0 per 1,000, which is nearly double the corresponding rate in the previous year. The next ratio of prevalence was 27.2 per 1,000 in Oudh, followed by 25.4 in the Allahabad district, and 22.3 in the Gwalior and Quetta districts. The lowest ratio of prevalence was in the Presidency district, 3.9, the next above being 7.0 in the Saugor district, and 7.3 in the Peshawar district. The ratio of mortality was highest in Gwalior, 8.56 per 1,000, followed by the Allahabad division with a rate 6.25, Rohilcund with 6.23, and Quetta with 5.46; the lowest ratio was 1.97 in the Lahore district, the next above being 2.44 in the Presidency circle, and 3.81 in the Saugor district. Compared with last year's return the ratio of admission increased in nine districts and decreased in three districts, and mortality increased in eight and decreased in the remainder. As in the previous two years Lucknow gave the highest number of admissions. The cases, including two at the military prison, numbered 88, and the deaths 11, in the preceding year the former were 79 and the latter 16; the mortality to attack, 12.5 per cent., has decreased considerably. The medical officer in charge of the station hospital remarks that "out of 86 admissions, no fewer than 50 were " from among men of 24 years of age and under, and out of the total number " of cases, 46 occurred during the first two years of residence in the country, " showing the influence of recent arrival. The admissions were distributed " over the year, June being the only month in which no cases were admitted, " while in February, July, and October they fell below the average. It would " be difficult to draw any seasonal conclusion from the above, but it would " appear that the dry months are more favourable to the development of the " disease than the wet ones. The large increase in December was undoubtedly " due to the increase of the strength of the garrison for the camp of instruc- " tion, two additional regiments having arrived as well as drafts for " different corps from home. In no case was the actual exciting cause satis- " factorily accounted for, though there is no reasonable doubt that impure " milk and other drinks procured in the bazars and surrounding villages were " a source of much of the disease." Next to Lucknow, Ranikhet had the most admissions for enteric fever, 55 with 8 deaths, as compared with 20 and 5 deaths in the preceding year. The mortality to attack was 14.5 per cent. Of these cases the medical officer in charge states that "36 came from the " barracks and 19 from the young soldiers in the standing camp. A woman " and two children were also attacked in different parts of the married quarters, " so that the disease was not confined to any one part of the community or to " any particular locality. The officers and residents in the station for the " summer escaped. The disease was characterised by great prostration and a " marked tendency to cerebral and thoracic complications, with tedious re- " covery and prolonged convalescence." At Rawal Pindi there were 41 attacks and 14 deaths, there having been 29 attacks and 8 deaths in the preceding year. The mortality to attack, 34.1 per cent., was high. The medical officer in charge remarks that "most of the cases occurred in December, and next to " that in June; 17 out of the total number of cases were in men under one " year's service in India, and 29 were in men with two years or less. In six " of the cases the men attacked had only been one month in the country, " and out of these two died; the probability is that these men contracted the " disease before arrival at the station on the journey from Bombay up country. " The disease attacked young soldiers, 29 out of the 41 cases being in men of " 23 years of age or less. All the deaths but one took place in men of 24 " years of age or under." At Quetta 49 cases occurred and 12 deaths; the mortality to attack being 24.4 per cent. In the preceding year there were only a few cases. The medical officer in charge was unable to account for this considerable increase of disease, and states that the sanitary conditions of the place were probably better in the year under report than in the preceding one. Of the total number of cases, 28 with 7 deaths occurred in the last quarter of the year, 14 and 2 deaths in the third, 7 and 3 deaths in the second, and none in the first quarter. Allahabad, including the Fort, gave 34 admissions and 4 deaths, an increase on the preceding year. Most of the cases, 19, occurred

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in the second quarter of the year, 9 in the third, 2 in the first, and one in the fourth. Most of the cases were of a severe type. The medical officer in charge states that there is no doubt that climate and high temperature are the chief sources of the disease, the admissions being most frequent at the beginning of the hot weather. At Bareilly there was a marked increase in the prevalence of enteric fever, 33 cases and 6 deaths, as compared with 11 cases and 3 deaths in the previous years. 9 of the cases came from regiments recently arrived from Burma. Of the cases which occurred in the station itself, the cause was difficult to state, but many of the men were in the habit of visiting the native city, the sanitary condition of which is said to be decidedly bad. In nearly all the cases were the common factors, youth, and short service in the country. At Subathu there were as many as 32 cases and 8 deaths, 22 and 5 deaths occurring in the third quarter of the year and the remainder in the second; 17 of the men attacked were young soldiers who had joined the last trooping season, and cases among them began to occur shortly after the arrival of the draft; the disease was, therefore, probably contracted by them en route. At Sialkot 29 cases and 6 deaths occurred, the former being more numerous by 8 and the latter less by 4 than in the previous year. The cases came from no particular locality; the majority were in men of 23 years of age and under, and of short service in the country. At Meerut 27 cases and 9 deaths occurred, nearly as frequent as in the previous year; the majority of the cases happened in the second quarter of the year. Among the remaining stations affected, those with the greatest number of cases were Chaubuttia, 19 and 3 deaths; Roorkee, 18 with 6 deaths; Fyzabad, 18 with one death; Dinapore, 17 with 6 deaths, chiefly in the last half of the year; Umballa, 15 with 3 deaths; Agra, 14 with 6 deaths; Chakrata, 14 with 5 deaths; and Mean Meer, 14 cases and 3 deaths. Of the above there was an increase in the number of cases as compared with the previous year at Dinapore, Umballa, and Agra; at Chakrata the number was the same, but in the other stations there was a decrease.

*Other Continued Fevers.*—The admission ratio for these fevers was 83·0 per 1,000, which differs only from that in the previous year by a decline of 2·1, but is below the corresponding ratio for the previous five years by 14·5. There was a mortality rate of ·05 per 1,000, dependent on two deaths, one of which occurred in an invalid after leaving the Command; the rate is below that in the preceding year as well as below the average rate. The ratio of constantly sick from these fevers was 2·90 per 1,000, identical with that in the foregoing year, but below the quinquennial average rate by ·29. As in the preceding year by far the highest admission ratio for these fevers occurred in the Peshawar district, 354·6 per 1,000, and it is higher than the corresponding rate in the previous year by 69·1. The next highest ratio was 198·9 in the Allahabad district, which also had the second highest rate in 1887; but that of the year under report shows an increase of 16·4. Next to this comes 128·1 in the Lahore district, an increase of 7·3, followed by 116·7 in the Meerut district, an increase of 59·7. The lowest ratio of prevalence of these fevers was 10·2 in the Saugor division, being below the corresponding rate in the previous year by 28·6. The ratio of admission next above was 16·4; this also shows a considerable decrease, one equal to 37·5. Quetta also had a low rate of prevalence, 22·3, being not much over one fifth of that in the preceding year. The ratio in the Rawal Pindi district, 23·6, shows an increase of 2·8.

*Cholera* was the cause of 146 admissions and 88 deaths, being in the ratios of 3·5 and 2·09 per 1,000 respectively. In the preceding year the corresponding rates were 3·3 and 2·25 per 1,000, and the average ratios for the preceding five years were 1·9 and 1·26. Prevalence of and mortality from cholera were greater both in 1887 and 1888 than the average. In Abstract XVIII. will be found a table taken from the report of the Principal Medical Officer showing the stations in the Command at which the admissions and deaths from cholera took place in each of the four quarters of the year. The great majority of the attacks and deaths were in the third quarter of the year, as in previous returns, and were 127 and 78 respectively. The disease was confined to six districts—the Presidency, Allahabad, Rohilcund, Meerut, Rawal Pindi, and Peshawar districts, while in the previous year all the districts were affected. The number of stations affected was 14 as compared with 25 in the preceding year. The greatest number of cases in any one station was 57 in Rawal Pindi,

among them there were 36 deaths. These cases include 15 and 7 deaths, *Bengal.* which occurred in cholera camps near the station itself. The disease was very prevalent all over the Rawal Pindi district, and Murree also suffered severely, 28 cases and 16 deaths being returned. The disease was in Rawal Pindi before it broke out in Murree, and the medical officer at the latter station states that "it was undoubtedly present in Kashmir; so that Murree "being on the road between these places could hardly escape. The disease "was of a very virulent type, and characterised by early collapse." At Rawal Pindi the outbreak commenced with a case on the 7th June, followed by one on the 23rd, after which the cases were frequent, and increased with rapidity. In the station and the camps there were 51 cases and 33 deaths in July, August, and September, but in the last quarter of the year there were only 4 cases and 2 deaths. In Murree there was one fatal case in June, and all the rest of the cases and deaths occurred in the following quarter. In Camp Gharial, near Murree, which was affected at the same time, 15 cases and 11 deaths occurred. At Camp Topa and Kuldunnah, both near Murree, there were two cases and one case respectively, all fatal. In the Allahabad district there were 20 cases and 9 deaths, of which 9 cases and 3 deaths occurred at the station of Allahabad. The medical officer in charge of the station hospital states that there were two outbreaks of cholera, one on the 7th of May and the other on the 9th of September; in the first there were 3 cases, of which 2 were fatal, amongst the men, and in the second five cases, one being fatal. There was also one case early in the year, which recovered. At Dinapore there were 6 cases and 5 deaths; 4 of the cases occurred in July, one in August, and one in September; the disease was epidemic throughout the surrounding neighbourhood. At Benares there were 5 cases among the troops, only one of which died. At Peshawar 8 cases occurred, all but one of which proved fatal, "showing the severe type usual in that district." The disease occurred in August, and was at the time prevalent in the native villages adjacent though not in the city of Peshawar. All the cases occurred in one regiment, five of them in the station itself, and the other three in cholera camp. In the Presidency district there were 7 cases and 4 deaths, 4 cases with 3 deaths being at Calcutta, 2 cases, recoveries, at Barrackpore, and one fatal case at Dum Dum. The remaining cases of cholera were 6, which occurred among troops on the march, with fatal result in 2 cases, one case at Meerut and one at Chaubuttia, both of which recovered.

*Epidemic Diarrhœa.*—Nine admissions are shown under this head against 46 in the previous year. They all occurred in the Rawal Pindi district during the prevalence of cholera. None proved fatal.

*Dysentery* caused 1,063 admissions and 21 deaths. The admission ratio was therefore 25·2 per 1,000 and the death rate ·50. Compared with the corresponding ratios in the preceding year an increase of 1·1 is observed in the former and a decrease of ·06 in the latter, and in comparison with average ratios for the preceding two years there is a decline in both of ·2 and ·22 respectively. With regard to prevalence in the different districts, it is observed that the highest admission rate was, as has been the case in the two previous years, in the Presidency district, it reached 60·2 per 1,000, and shows an increase of 8·2 over the last return. The next ratio was in the Gwalior circle, 41·1, which is an increase of 12·2, followed by Rohilcund with 38·0, an increase of 9·4; the lowest admission ratio was 15·2 in the Rawal Pindi district, it is lower than the corresponding rate in the previous year by 3·1; next above is the ratio for Quetta, 17·3, which is, however, an increase of 3·9, and next 18·4 in the Meerut district, a decline of 3·9, and 19·1 in the Saugor district, a decline of 14·5. Mortality was highest in the Gwalior circle, 6·85 per 1,000, an increase of 5·24 over the last year's ratio; the next ratio was 1·17 in the Allahabad district, but it shows an increase of ·75. There was no mortality in the Oudh and Saugor districts, and low ratios, ·30 and ·33 in the Rohilcund and Rawal Pindi districts respectively. From a table in Abstract No. XX. will be learnt the seasonal prevalence of dysentery during the year, the highest ratio being 7·2 per 1,000 in the last quarter, next, 6·8 in the third quarter, 6·3 in the second, and the lowest, 4·4, in the first quarter. In the preceding year also the greatest prevalence of dysentery was in the last half of the year. Mortality followed the same sequence as well



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in the preceding year as in the year under report, the highest ratio, '23, being in the last quarter, and the lowest, *nil*, in the first quarter.

The cases completing the first sub-group of diseases were 18 of mumps, 2 of influenza, and one of diphtheria, which proved fatal.

*Malarial Fevers* were the cause of 14,559 admissions and 15 deaths, including that of an invalid after leaving the Command. The admission ratio, therefore, was 345·5 and the death rate '36 per 1,000. Compared with corresponding ratios in the preceding year a decrease of 10·6 is observed in the admission rate, and one of '28 in the death rate; and compared with average ratios for the preceding five years the decline in admission rate equals 86·4 and that in mortality '23. The ratio of men constantly sick from these fevers was 10·45 per 1,000, almost identical with the previous year's rate, but below the average rate by 1·49. The greatest prevalence of malarial fevers in any district was, as in the preceding year, in the Gwalior district, and the rate of admission, 1489·7 per 1,000, exceeds that of the last return by 326·0. The next ratio was 630·8 in the Saugor district, this exceeds the ratio in the previous year by 37·6. Following is the ratio for the district of Peshawar, 615·7, which is more than double the corresponding rate in the preceding year. This increase is said to have been due to the prolonged hot weather and the great failure of the October and November rains. The medical officer in charge remarks that he has been informed that when these two meteorological conditions occur together the prevalence of malarial fevers is always above the average during the latter months of the year. Meerut gave a high ratio of admission, 473·5, but this shows a marked decrease as compared with that of the foregoing year. The Rawal Pindi district gave the next admission rate, 387·8; but this, on the contrary, is much increased, being more than double the last year's rate, while the Lahore circle with a ratio of 376·3 has had less prevalence of malarial fevers by 188·2 per 1,000. In Allahabad the ratio, 332·9, shows an increase of 139·4, and in the Presidency the rate, 271·5, a decrease of 91·1. In Quetta there is a very considerable decrease, 236·6, the ratio of admission being only 229·5. This is said to have been attributable to the gradual improvement of the station, and the better accommodation given to the troops. In Sirhind the ratio of admission was 210·8, and is slightly above the rate in the previous year. The lowest ratios of prevalence were in the Rohileund and Oudh districts, 160·9 and 138·8 per 1,000 respectively, the former showing a decrease of as much as 85·2 and the latter one of 7·7. The deaths in the country are returned as 4 from ague, 3 from malarial cachexia, and 7 from remittent fever, and there was one death in an invalid from remittent fever. Four of the deaths occurred in the Presidency district and four in the Rawal Pindi district, two each in the Saugor and Meerut districts, and one in the Lahore and Peshawar districts respectively.

*Septic Diseases.*—74 admissions and 5 deaths are recorded under this head, being in the ratios of 1·8 and '12 per 1,000. The admission ratio in the preceding year was 1·7 and the death rate '05. The cases comprised 71 of erysipelas, one of pyæmia, and two of septicæmia. The cases of the two last named diseases proved fatal, and there were two deaths from erysipelas. The next sub-group of diseases is that of venereal affections. The admissions for *primary syphilis* were 2,987, being in the ratio of 70·9 per 1,000, which differs from the corresponding rate in the preceding year only by a decrease of 1·9, but is lower than the average rate for the previous two years by 25·9. The ratio of constantly sick from primary syphilis alone was 5·04 per 1,000, which is below the rate for the preceding year by '43, and below the two years' average by 2·09. If to the sickness from primary syphilis that for simple venereal ulcers be added, it is found that the admission ratio for primary venereal sores was 147·6, and the ratio of constantly sick 9·53 per 1,000. Compared with corresponding rates in the previous year the admission ratio is increased by 8·0, but the constantly sick ratio is almost identical, and compared with similar average ratios for the previous five years there is an increase of 23·5 in admission ratio and one of '83 in the constantly sick rate.

*Secondary syphilis* caused 1,297 admissions, equal to a ratio of 30·8 per 1,000, which is above the previous year's rate by 3·6 and above the quinquennial average rate by 2·9. The ratio of constant inefficiency on this account was 2·88, and is increased in both these comparisons by '41 and '43 respectively.

Three deaths occurred from constitutional syphilis, one being that of an *Bengal*. invalid after leaving the Command.

*Gonorrhœa*.—The admissions numbered 7,689, the ratio being 182·4 per 1,000. Compared with the ratio for 1887 an increase of 248 is observed, and compared with the corresponding average ratio there is an increase of 28·5. The ratio of constantly sick was 12·55 per 1,000, an increase of 2·24 over the rate in the foregoing year and of 2·26 over the average rate.

Including all forms of venereal disease the admission ratio for the year under report amounted to 360·8 per 1,000. This is higher than the ratio in the previous year by 36·4, and than the similar average rate for the preceding five years by 54·9. The total amount of constant inefficiency was equal to 24·96 per 1,000, which is greater than in the previous year by 2·64, and than the quinquennial average rate by 3·52.

Comparing the prevalence of these affections in the different districts it will be observed from Abstract XV. that primary syphilis was, as was also the case in the preceding year, most prevalent in Oudh, the admission ratio being 128·1 per 1,000, the next ratio of prevalence was 116·9 in the Sirhind district, followed by 90·0 in Rohilcund, and 89·1 in the Rawal Pindi district; the lowest ratio of prevalence was only 8·4 in the Peshawar district, the next being 10·9 in Quetta, and 15·3 in the Saugor district. For secondary syphilis the highest admission ratio was 47·0 per 1,000 in the Presidency district, followed by 40·0 in the Sirhind district, and 38·9 in Rohilcund; the lowest ratio was 15·4 in the Peshawar district, those immediately above being 25·9 in the Meerut district, and 28·9 in Quetta. *Gonorrhœa* caused its highest admission rate, 296·6 per 1,000, in the Saugor district, after which was 239·7 in the Presidency district, and 233·6 in the Lahore district; the lowest ratio of admission was 95·2 in Quetta, the next above 110·0 in Sirhind, and 121·7 in the Peshawar district.

Taking these venereal diseases together the highest admission rate was 384·7 per 1,000 in Oudh, followed by 354·5 in Rohilcund; in the preceding year also the two highest admission rates occurred in these districts; the third highest ratio was 346·3 in the Saugor division, the next being 341·5 in the Presidency district, and 340·6 in the Lahore district; the lowest ratio of prevalence was 134·3 per 1,000 in the Quetta district, the next above being 145·5 in the Peshawar division, and 266·9 in Sirhind. In the previous year also these three administrative circles gave the lowest ratios of admission for venereal diseases. Compared with the return for the preceding year an increase is observed in the admission rates of all the different districts with one exception, that of Peshawar, where a decline of 33·0 occurred. Increase was most marked in the Saugor district, where it amounted to 100·7 per 1,000; next in the Lahore division, 64·3; and in Presidency, 49·9; Sirhind, 49·7. In the Quetta, Oudh, and Rawal Pindi districts the amount of increase was only 3·2, 5·3, and 19·3 respectively. The Principal Medical Officer, speaking of the general increase of venereal affections, reports that it is doubtless in great measure due to the abolition of any check on their spread, and points out that as the new measures were only adopted in the latter half of the year the effects did not take long to develop.

*Parasitic Diseases*.—122 admissions are returned under this head, the admission ratio being 3·0 per 1,000 as compared with 3·8 in the previous year. The greatest prevalence was in the Presidency district, the ratio being 7·3; Allahabad, which was first in the previous year, following with 5·5. In the Gwalior district no case occurred, and the rate in Rohilcund was only ·6. Of the total number of admissions 109 were for *tænia solium* and 9 for *tænia mediocanellata*.

*Scurvy* was the cause of 41 admissions as compared with 44 in the preceding year. The only district in which there was not at least one case was Peshawar, the greatest number in one district being 13 in Rohilcund, the next 5 in the Meerut circle, and 4 in Quetta. One death from scurvy occurred at Umballa.

*Alcoholism*.—Under this head 567 admissions are returned and 2 deaths. The ratio of admission therefore was 13·5 per 1,000, which is lower than the corresponding rate in the previous year by 3·5. The highest ratios of admission for alcoholism in the districts were 34·4 in Saugor and 24·2 in Sirhind. In the

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previous year also these districts gave high admission rates. Out of the total number of admissions 18 were cases of delirium tremens, one of which proved fatal.

*Debility, &c.*—940 admissions are recorded, equal to a ratio of 22·3 per 1,000, which is higher than the corresponding rate in the previous year by 2·6, and than the average rate for the preceding five years by 4·7. The highest admission rate in any district was 51·7 in that of Meerut, the next being 29·3 in the Allahabad district; the lowest ratios were 10·4 and 15·1 in Sirhind and the Rawal Pindi district respectively. Compared with the return for the preceding year the admission ratio is increased in eight districts, the increase being 16·4 in Meerut, 12·3 in Gwalior, and 11·9 in Peshawar; decrease is observed in four districts, the most marked instance being 15·5 in Allahabad. One death is recorded under the head of debility, it occurred at Meerut.

*Rheumatism* caused 1,264 admissions and 4 deaths, including that of an invalid. The admission ratio, 30·0 per 1,000, shows a decrease of 1·2 from that in the preceding year, and one of 5·1 from the quinquennial average rate. Rheumatic affections were most prevalent in the Rawal Pindi district, the ratio being 35·9 per 1,000. In the Meerut, Allahabad, and Sirhind districts these affections were also prevalent, the ratios being 34·3, 34·0, and 33·7 respectively. The districts in which the least amount of rheumatism occurred were Rohilcund with a ratio of 21·1, Peshawar with 22·4, and the Presidency with 25·9. Compared with the corresponding ratios for the preceding year there is no great difference in admission rates in the various districts, the most marked being a decrease of 13·2 in Sirhind and one of 8·5 in Rohilcund. Of the total number of admissions 85 were cases of rheumatic fever, from which 3 deaths occurred in the country. The death of an invalid was due to osteo arthritis.

*Tubercular Diseases.*—The admissions recorded under this head were 138, and there were 30 deaths in the country and 4 in invalids who had left the Command. The admission ratio, therefore, was 3·3 and the death rate ·81 per 1,000, as compared with 3·6 and ·76 respectively in the preceding year, and with 3·8 and ·92 the average rates for the two preceding years. Tubercular disease was represented in each of the administrative districts, though in Gwalior only by a single case. The highest admission ratio for tubercular disease in any circle was 5·7 in that of Saugor, the next 5·0 in Oudh, and 4·4 in Meerut; the lowest ratio, 1·4, was in Peshawar, and also in Quetta, the next above being 1·7 in Gwalior and Lahore respectively. Compared with last year's return admission rates have increased in five districts, especially in Saugor, by 5·1, but in the other four the increase is slight; of districts in which decrease occurred Allahabad and Lahore show the most marked, 3·6 and 4·0 respectively. Mortality was highest in the Saugor and Lahore districts, the ratios being 1·90 and 1·40 respectively; in Rohilcund, Gwalior, Peshawar, and Quetta there was no mortality. With the exception of a single fatal case of tubercular peritonitis all the admissions as well as all the deaths were due to tubercular disease of the lungs. The four deaths of invalids were also due to lung affection.

*Other diseases* of the last group of general diseases caused 527 admissions and 11 deaths, including one of an invalid. The admission rate, therefore, was 12·5 and the death rate ·26 per 1,000 as compared with 14·7 and ·10 respectively in the preceding year. The principal cause of admission was non-malignant new growth, 354 cases, of which about seven eighths were simple papilloma. There were 4 admissions for malignant disease, including 3 of sarcoma, all fatal, and one of epithelioma. Anæmia caused 148 admissions and 2 deaths, scrofula 14 with one death, purpura 6 with 2 deaths, and one case of diabetes mellitus. There was also one death returned as leucocythæmia, the man had been admitted in the previous year. The death of an invalid was due to sarcoma.

*LOCAL DISEASES.*—*Diseases of the Nervous System* were the cause of 470 admissions and 20 deaths. The ratios of admission and mortality therefore were 11·1 and ·48 per 1,000 as compared with 11·6 and ·32 in the previous year, and with 12·1 and ·32 respectively, the average ratios for the two preceding years. Of the total number of admissions 55 were cases of mental disease, being in the ratio of 1·3 per 1,000 as compared with 1·7 in the

previous year. Taking the admission ratios for mental disease in the different districts it is observed that they vary from 3·4 per 1,000 in the Presidency district, and 3·1 in the Lahore district to *nil* in the Saugor district, and ·8 in the Meerut and Rawal Pindi districts respectively. Excluding mental disease the highest admission ratio for nervous diseases was 14·7 per 1,000 in the Oudh division, the next being 12·5 in the Rohilcund district and 11·8 in Quetta; the lowest ratios were 5·1 and 5·9 in the Lahore and Peshawar districts respectively, the next above being 8·3 and 8·6 in Saugor and Gwalior. Compared with the last return increase of admission rate occurred in the Rohilcund, Saugor, Rawal Pindi, and Quetta districts, the increase being 9·9 in the last named, and 6·6 in Saugor. In Peshawar the rate did not change, but in all the remaining districts a decline is observed, though in none to any great extent, the most marked being 4·3 in the Allahabad district. Mortality was greatest in the Presidency and Quetta districts, the ratios being ·98 and ·91 per 1,000 respectively; and in the Saugor, Gwalior, and Lahore districts there was no mortality. The principal causes of admission for nervous diseases, exclusive of mental affection, were neuralgia, 248 cases; epilepsy, 49; paralysis, 49; and vertigo, 21 cases. The causes of death were inflammation of the brain and its membranes, 10 cases; apoplexy, 4; cerebral hæmorrhage, 2; and anæmia of the brain, abscess of brain, paralysis, and tetanus one case respectively.

*Diseases of the Eye.*—586 admissions are returned, being in the ratio of 13·9 per 1,000, which is almost identical with the corresponding rate in the previous year, but is below the average rate for 5 years by 1·0. As in the previous year, the greatest prevalence of ophthalmic affections in any district was in that of Peshawar, the ratio of admission being 19·6 per 1,000, this is, however, lower than the corresponding rate in the previous year by 5·1, the next ratio, 18·9, was in Oudh, an increase of 8·8, followed by 16·0 in Meerut, a fractional decrease from the rate in the preceding year; the least prevalence again occurred in Gwalior, the rate being 8·6, almost the same as in the last return, the next above being 11·0 in Rohilcund, and 11·2 in the Lahore circle, the last-named ratio shows a decline of 4·6. 391 admissions, or two thirds of the whole, were due to conjunctivitis, and among the remaining third the diseases causing most frequent admission were keratitis, corneal ulcer, and iritis.

*Diseases of other Organs of Special Sense.*—533 admissions are shown, being in the ratio of 12·6 per 1,000, fractionally above the corresponding rate in the preceding year, but below the average rate of five years by 2·4. The highest admission rate for these affections was, as in the preceding year, in the Presidency district, 27·9 per 1,000; the lowest ratio was 9·9 in Sirhind. 533 of the admissions were for aural diseases, of these no less than 377 were cases of inflammation of the external meatus. One death occurred from necrosis of internal ear. Among 38 admissions for nasal affection there were 15 cases of epistaxis and 10 of nasal catarrh.

*Diseases of the Circulatory System.*—482 admissions are returned and 11 deaths, being in the ratios of 11·4 and ·26 per 1,000 respectively. Compared with corresponding ratios in the previous year there is a decline of 1·2 in the admission rate and one of ·11 in the death rate, and compared with average rates for the preceding five years the decrease in the former amounts to 2·4 and in the latter to ·17. Among the different districts the highest ratio of prevalence is found in the Quetta district, and amounted to 27·8 per 1,000, which is an increase of 16·4 on the ratio of admission in 1887. This was followed by 25·7 in Gwalior, a slight decline from the previous year's rate, and by 15·9 in Oudh, an increase of 7·3; the lowest ratio was in Sirhind, 5·5, a considerable decrease, by 9·9, from the last return, the next above being 7·0 in Lahore and 9·2 in Rawal Pindi, both of which show a decrease. The highest death rate was 1·71 in Gwalior, the next, ·66, in Rawal Pindi, ·49 in the Presidency, and ·46 in Quetta; in the Allahabad, Oudh, Saugor, and Peshawar districts there were no deaths. The three principal causes of admission were palpitation, valvular disease of the heart, and varix, the cases numbering 316, 74, and 57 respectively. The causes of death were valvular disease of the heart, 8 cases, and endocarditis, fatty degeneration of the heart, and aneurysm, one case respectively.

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*Diseases of the Respiratory System* caused 1,581 admissions and 48 deaths, including that of an invalid. The admission ratio, 37·5 per 1,000, is exactly the same as in the preceding year, but is below the quinquennial average rate by 4·4. The death rate, 1·14 per 1,000, is in excess in both these comparisons by ·21 and ·30 respectively. Taking the various administrative circles, by far the highest ratio of prevalence was in the Quetta district, this was also the case in 1887, but the ratio for the year under report, 138·9 per 1,000, shows a considerable increase over the rate in that year, by as much as 65·2. The admission rate next in order is not much over a fourth of the foregoing, being only 39·5 in the Allahabad division, followed by 38·9 in Rohilcund, 35·9 in Rawal Pindi, and 35·7 in the Peshawar circle; the lowest ratio was in Saugor, 18·5, the next above being 20·6 in Gwalior and 25·2 in Sirhind. Comparing with corresponding ratios in the preceding year increase of admission rate is observed (in addition to Quetta above mentioned) in the Presidency, Rohilcund, and Rawal Pindi districts, but not to any very great extent; in all other districts a decline is observed, most marked in Gwalior and Peshawar, 34·0 and 23·5 respectively. The highest mortality ratio was also in Quetta, and was 3·18 per 1,000, an increase of ·22, the next ratio was 1·96 in Rawal Pindi, an increase of 1·63, followed by 1·81 in Meerut, an increase of 1·14; in Gwalior there was no mortality as compared with 1·61 in the preceding year, in Rohilcund there was a rate of ·30, and in Sirhind one of ·39, in both these cases there was a decline of ·67. Of the total number of cases treated 1,238, or nearly four fifths, were bronchial affections, and among the remainder the most numerous cases were pneumonia, 182; pleurisy, 66; and pneumonic phthisis, 27. The deaths in the Command included 28 from pneumonia, 4 from empyema, 4 from abscess of the lung, 3 from pneumonic phthisis, 2 from bronchitis, 2 from oedema glottidis, 2 from pulmonary hæmorrhage, one from passive congestion of the lung, and one from pleurisy. The death of an invalid was due to pneumonia.

*Diseases of the Digestive System.*—The admissions numbered 5,741 and the deaths 81. The admission ratio, therefore, was 136·2 and the death rate 1·92 per 1,000. Compared with the corresponding ratio in the previous year the admission ratio shows a decline of 12·8, and compared with the average rate for the preceding two years there is a decline of 22·7. The mortality rate is almost identical with that in the preceding year, but is above the average of the two previous years by ·17. The highest ratio of prevalence of these diseases in any of the different districts was 195·2 per 1,000 in Gwalior, this district gave the highest ratio in the previous year also, the next was 186·9 in the Presidency circle, followed by 179·0 in the Allahabad district, and 171·9 in Rohilcund; the lowest admission ratios were 116·6 and 116·8 in the Oudh and Peshawar circles respectively, the next above being 118·4 in the Meerut circle and 124·7 in Rawal Pindi. Compared with corresponding ratios in the previous year an increase of admission rate is observed in the Presidency district of 16·0; in Rohilcund one of 17·5; in the Peshawar district one of 3·9; and in Quetta 25·4. In all the other districts there was a decrease, the most marked being 69·7 in Gwalior, 40·7 in the Allahabad division, 39·3 in the Meerut circle, 28·1 in Oudh, and 28·0 in the Lahore circle. Mortality was highest in Rohilcund, the ratio being 3·26 per 1,000, an increase of 1·31 over the corresponding rate in the previous year, the next ratio was 2·62 in the Rawal Pindi district, an increase of 1·29, and the next 2·44, a decrease of 2·89; the lowest mortality ratio was ·64 in the Saugor district, a decline of ·50; the next being ·75, a decline of ·76; and then 1·40 each in the Lahore and Peshawar districts. The admissions were principally due to affections of the mouth and throat, 1,410, sore throat contributing nearly half that number; diarrhoea, 1,392; dyspepsia, 864; and hepatic diseases, 1,250. The last named included hepatic congestion, 437 cases, hepatitis, 502, jaundice, 215, and hepatic abscess 83, &c. Of the cases of abscess of the liver 4 were associated with dysentery, and were fatal, and 55 of the remaining cases were also fatal. Deaths were also caused as follows: hepatitis 5, peritonitis 5, intestinal obstruction 3, enteritis 3, sloughing sore throat 1, and gastric ulcer 1. The deaths of two invalids were caused by abscess of the liver.

In Abstract XIX. there is a table, taken from the report of the Principal Medical Officer, which shows the prevalence of dysentery, diarrhoea, and

hepatitis in each of the divisions of the Command, and the mortality therefrom; and in Abstract XX. is a table showing the prevalence of and mortality from these diseases in each quarter of the year. The sickness and mortality from dysentery has been spoken of above. For diarrhoea the admission ratio in the Command is shown to be 33.0 per 1,000, which is lower than the corresponding rate in the preceding year by 7.5. There was no death from diarrhoea during the year. The greatest prevalence of diarrhoea in any division was in Gwalior, the rate being 82.2 per 1,000; the next was in the Allahabad Division, 58.6; and the third, 50.8, in Rohilcund. In the previous year also these three divisions had the greatest prevalence of diarrhoea, but the ratios in the year under report are all lower than those in 1887. The lowest ratio of prevalence was 19.6 in Oudh, the next, 26.4, in Quetta, and 27.3 in the Peshawar district. With regard to seasonal prevalence it will be observed that the highest ratio occurred in the third quarter of the year, the next in the last quarter, and the lowest rate in the first quarter. In the previous year the greatest and least prevalence were also in the third and first quarters respectively. Hepatitis and abscess of the liver gave an admission rate of 24.4, and a death rate of 1.49 per 1,000, as compared with 22.3 and 1.39 in the preceding year. With regard to separate districts, the highest admission rate was 57.7 in the Presidency district, the next, 34.7, in Rohilcund, followed by 31.1 in the Sirhind district, and 29.3 in the Saugor district; the lowest ratio was 17.1 in Gwalior, the next above being 17.5 and 17.6 in the Meerut and Rawal Pindi districts respectively, and 17.8 in the district of Quetta. Compared with the return for the preceding year the ratios of prevalence have decreased in the Allahabad, Gwalior, and Meerut districts, particularly in the first named; in all the other districts an increase is observed, but as a rule not to any great extent, though in the Presidency there was one of 16.9. Mortality was highest in Rohilcund, 2.67 per 1,000, next, 2.44, in the Presidency, and third, 2.17, in Sirhind; in Gwalior there was no mortality, in Saugor the rate was .64, in Oudh the ratio was .75, and in Meerut it was .99. Compared with the last return an increase of mortality is observed in Rohilcund, Sirhind, and the Rawal Pindi and Quetta districts, but in the remaining districts a decrease is observed. Seasonal prevalence of these affections was greatest in the third quarter of the year, slightly less in the second, the ratios being 7.0 and 6.9 per 1,000 respectively, these are succeeded by 6.3 in the first and 4.7 in the fourth quarter. Mortality was highest in the first quarter, .43 per 1,000, next in the third quarter, .42, then in the second, .35, and least in the first, .28. Except that the greatest prevalence was in the third quarter of the year the sequence either in prevalence or mortality is not similar to that in the preceding year.

*Diseases of the Lymphatic and Glandular System.*—848 admissions are recorded and 2 deaths; one being that of an invalid. The admission ratio differs only fractionally from that in the preceding year, but is above the average rate of the preceding five years by 2.1. The highest admission ratio in any district was 46.2 per 1,000, this occurred in Gwalior, which also gave the highest rate in the preceding year, the next ratio was 32.8 in the Allahabad district, followed by 29.6 in Oudh; the lowest ratio was 8.7 in the Rawal Pindi district, the next above being 10.9 in Quetta, and 14.8 in Rohilcund. The admission rate was increased in half the districts, and decreased in the other half as compared with the previous year, but the differences are not great in any case, the most marked being an increase of 14.1 in Gwalior and a decrease of 12.4 in Quetta. The principal causes of admission were inflammation or suppuration of the inguinal glands, 634 cases, and splenic diseases, 134 cases. The death in the country was due to splenitis, and that of an invalid to the same cause.

*Diseases of the Urinary System* were the cause of 92 admissions and 7 deaths; being in the ratios of 2.2 and .17 per 1,000, which exceed those in the preceding year by .3 and .02. Of the districts the Presidency had the highest admission rate, 3.4, and Quetta the next; the lowest admission rates were in Oudh and Rohilcund, 1.5 and 1.8 respectively. The principal diseases causing admission were incontinence of urine, 25 cases; Bright's disease, 19 with 3 deaths; cystitis, 17; and acute nephritis, 13 cases and 3 deaths. A death is also recorded from pyonephrosis.

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*Diseases of the Generative System* were the cause of 4,047 admissions and one death. The admission ratio, 96·1 per 1,000, is higher than that in the preceding year by 9·9, and above the average rate of the preceding two years by 19·6. The highest ratio in any district was 168·5, in the Meerut division, and the lowest, 39·1, in Oudh; both of these are higher than the corresponding rate in the previous year. 3,235 of the admissions were cases of simple venereal ulcer, or more than three fourths of the whole. Among the remaining cases the chief causes of admission were orchitis and urethral stricture. One death is returned as due to extravasation of urine.

*Diseases of the Organs of Locomotion.*—298 admissions are recorded and 4 deaths, but three of the latter occurred among invalids who had left the Command. The admission ratio, 7·1 per 1,000, differs only fractionally from the average rate of five years, and is almost identical with that in the previous year. The admission ratios in the districts varied from 10·3 in Gwalior to 5·1 in the Saugor district. The chief cause of admission was synovitis, 178 cases, or considerably more than half the total number. The deaths were as follows: three from abscess and one from necrosis.

*Diseases of the Connective Tissue.*—906 admissions occurred, being in the ratio of 21·5 per 1,000, which is above the previous year's rate by 1·2 and fractionally above the average. The ratio of prevalence in the different districts ranged from 29·5 in Sirhind to 13·2 in the Presidency.

*Diseases of the Skin* caused 2,645 admissions, equal to a ratio of 62·7 per 1,000, which is lower than the corresponding rate in the preceding year by 6·2, and than the average rate for the previous five years by 17·1. The highest ratio of prevalence of cutaneous affections was 99·3 per 1,000 in the Presidency district, the next being 77·8 in Oudh, and 77·1 in Gwalior; the lowest ratio was 38·3 in Quetta, the next above being 52·8 in the Rawal Pindi district, and 56·1 in Rohilkund. The prevalence of these affections increased by 26·5 per 1,000 in the Presidency, by 23·7 in the Saugor district, by 17·7 in Gwalior, and by 6·1 in the Peshawar district; in the remaining eight districts a decrease occurred, the most marked being 28·7 in the Allahabad district and 24·0 in the Meerut district. The principal causes of admission were, as usual, ulcers, boils, whitlows, ringworm, and itch.

*Poisons.*—Under this head 15 admissions and 7 deaths are recorded, as compared with 14 admissions and 5 deaths in the preceding year. The admissions included 8 for poisoning by alcohol, of which 4 cases proved fatal; there were also 3 more deaths from alcoholic poisoning, out of hospital. There were two cases of poisoned wound by dog-bite, and one case each of poisoned wound by scorpion sting, poisoning by oxalic acid, poisonous fish, poisoning by lead, and poisoning by irritant drugs respectively, but all these cases recovered.

*Injuries* caused an admission rate of 120·5 and a death rate of 2·54 per 1,000, the former being lower than the corresponding rate in the preceding year by 1·4, but the latter higher by ·15; and compared with the average of the preceding two years there is a decline of ·9 in the admission rate, and an increase of ·14 in the death rate. General injuries caused 169 admissions and 65 deaths, as compared with 108 admissions and 60 deaths in the previous year. The admissions included 99 for heat apoplexy, 57 for sunstroke, 9 for multiple injury, 3 for burns or scalds, and one for exhaustion. The deaths were due to heat apoplexy in 35 cases, to sunstroke in 8, to multiple injury in 7 cases, to asphyxia by drowning in 12 cases, all of which were accidental, to burns, to plugging of the air passages causing asphyxia, and to judicial hanging for murder in one case respectively; the last named occurred at Dinapore. The admissions for local injury were 4,909 in number, and there were 42 deaths; in the previous year there were 4,882 admissions and 38 deaths. The principal causes of admission were abrasions, wounds, contusions, sprains, dislocations, and fractures. Of the deaths 20 were due to gunshot wound, of which 12 were suicidal, 1 homicidal, and 7 accidental; fracture of skull caused 8 deaths, of which one was suicidal; cut-throat caused 7 deaths, 5 being suicidal, one homicidal, and in one case it is stated that it is not clear whether it was suicidal or not; there were three deaths from contusion of abdomen, &c., accidental; and one death from fracture of the spine, dislocation of the spine, fracture and dislocation of pelvis, and burn respectively. The cases of

homicide were as follows: At Nowahera a man was found with a wound of the neck, which a court of inquest pronounced to have been caused by some person or persons unknown. Two men were killed in the Chittagong hills by raiders; and one man at Dinapore died from gunshot wounds inflicted by a comrade. No motive was assigned and the murderer was hanged.

The cases of suicide were 19 in number; 12 resulted from gunshot, 5 from cut-throat, and 2 from jumping from a height, causing multiple injury and fracture of the skull respectively. In 13 cases no motive was discovered, but in the remainder the following were the presumed causes: defalcation of public money in two cases, and depression from sickness, depression from drink, and dread of cholera then prevalent, debt, and depression at an accusation of crime in one case respectively; 11 of the suicides are said to have been committed while in a state of temporary insanity, 2 in a condition of mental depression, 2 were deliberate acts, and in 4 cases no verdict is recorded, or there was no court of inquest. In one regiment there were two suicides, but all the other suicides were single cases in as many corps or batteries. In 13 cases the suicides were between 22 and 28 years of age, in 4 between 30 and 33 years, and in 2 over 36 years of age. As regards length of service, 4 of the suicides had between 1 and 3 years' service, 4 were in their fifth year, 4 were between the seventh and eighth year of service, and 7 had over ten years' service. There were 13 cases of attempted suicide against 2 in the preceding year, viz., 9 by cut-throat, 2 by hanging, one by gunshot, and one by poison, oxalic acid. Drink was the cause in 6 cases, insanity in 2, domestic quarrel in 1, and in 4 cases no causes could be ascertained. Of the above cases three regiments furnished two each, the remainder being single cases in various corps.

Among the surgical operations performed were an amputation of the arm on account of gangrene, resulting from a tiger's bite, septicæmia supervened and death followed; an amputation of the fore-arm on account of gunshot wound was successful, but an amputation of the leg on account of gunshot wound had a fatal result; there were several minor amputations, all with successful results. In a case of dislocation of the thumb excision of the head of the metacarpal bone was performed with successful result. In another case, one of dislocation of the elbow, the head of the radius was excised with success. At Chakrata a case of compound fracture of the vault of the skull with depression occurred in which trephining was successfully practised. Ligation of the radial artery in two cases, and of the ulnar in one on account of traumatic aneurysm, gave satisfactory results. Of twelve tumours removed one was malignant, but in all successful result was obtained. There were 8 cases of tapping liver abscess, of which 4 were fatal, in 3 cases the liver was opened by incision, with fatal result in one case, and in 3 cases aspiration was performed, with 2 deaths. There were 3 cases of excision of the eyeball, one for disease and two for injury, all recovered. There were 6 cases of paracentesis of the thorax performed, five on account of empyema, one case being fatal, and one case on account of pleurisy. Tracheotomy was performed in two instances, in one case it was successful, but in the other, in which it was undertaken on account of diphtheria, death ensued. Fatal result also happened after a case of perineal section on account of extravasation. In addition to the above mentioned there were many other operations of a minor character performed, in all of which satisfactory results were obtained.

*Invaliding.*—The number of men sent home as invalids during the year was 869, being in the ratio of 20·62 per 1,000, which is in excess of the corresponding rate in the preceding year by 1·95, but below the average rate for the preceding ten years by 9·34. From Abstract No. XL. it will be seen that as regards the various arms of the service the ratio of invaliding per 1,000 men was highest in the infantry, 20·48, the next ratio was 20·27 in the artillery, while in the cavalry the rate was only 14·38. In the preceding year the artillery gave the highest ratio, next the cavalry, and the infantry the lowest. Comparing the results in the year under report with those of the year preceding an increase of 4·19 is observed in the ratio for the infantry, but in the cavalry there was a decline of 6·26, and in the artillery one of 4·18. In the cavalry the highest invaliding ratio in any one regiment was 26·04 per 1,000, in the 8th Hussars stationed at Meerut, which is lower by



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6·97 than the highest rate in the same arm in the previous year; the lowest rate was 14·52 in the King's Dragoon Guards quartered at Rawal Pindi, this ratio is higher by 1·41 than the lowest ratio in the preceding year. In the artillery the highest ratio of invaliding was 120·37 per 1,000 in No. 2 Battery, 1st Brigade, Eastern Division, this is the highest ratio of any corps in the Command, and is said to have been due to the battery having been stationed at Delhi during 1887 and part of 1888. There was no invaliding in 13 batteries, but one of these was only a very short time in the Command, and among batteries with low ratios may be mentioned K Battery, 4 Brigade, at Meerut, with 5·38. In the infantry the highest invaliding ratio was 93·88 per 1,000 in the 2nd Battalion, Lincolnshire Regiment, stationed at Chakrata and Meerut, but it had had half a battalion for ten months at Delhi in the previous year. The next highest ratio was in the 2nd Battalion, Royal Lancaster Regiment, at Quetta and Karachi, 82·90. The lowest invaliding ratio in the infantry was 3·47 in the 4th Battalion, Rifle Brigade, at Lucknow and Dinapore, followed by 5·04 in the 2nd Battalion, Highland Light Infantry, at Peshawar. As regards the influence of age and service in the country, it is observed, from tables given above, that men of 20 years of age and under, as usual, furnished the lowest ratio of invaliding, above this invaliding increased among men between 30 and 35 years of age, then among men between 20 and 25 years, then among men between 25 and 30 years, and most among men over 35 years of age. This sequence is not exactly similar to that in the preceding year, though generally invaliding increases with age. Length of service in the country of under one year shows the lowest ratio of invaliding, but this increases steadily during the next five years, in the seventh year there was a slight decrease, in the eighth year it rose again, falling in the ninth, and then again increasing.

The principal causes of invaliding were, dysentery 34 cases, or '81 per 1,000; malarial fevers 59 cases, or 1·40 per 1,000; constitutional syphilis 40 cases, or '95 per 1,000; debility 133 cases, or 3·16 per 1,000; rheumatism 32, or '76 per 1,000; tubercular diseases 55 cases, or 1·31 per 1,000; diseases of the nervous system 98 cases, or 2·33 per 1,000, of these mental disease caused 53 cases, or 1·26 per 1,000; diseases of the circulatory system 99 cases, or 2·35 per 1,000, of these 36 were cases of palpitation and 35 of valvular disease of the heart; diseases of the respiratory system 21 cases, or '50 per 1,000; diseases of the digestive system 76 cases, or 1·80 per 1,000, of these 43 were cases of hepatic affection; diseases of the organs of locomotion 33 cases, or '78 per 1,000; diseases of the lymphatic and glandular system 38 cases, or '90 per 1,000; and injuries 43 cases, or 1·02 per 1,000. Compared with the returns for the previous year, it is observed that the increase in the invaliding ratio is distributed in fractional amounts over various diseases, principally debility, diseases of the lymphatic and glandular system, dysentery, and malarial fever. In some orders of diseases a decrease is observed, the most marked being '63 in diseases of the circulatory system. The number of men finally discharged as medically unfit was 495, equal to a ratio of 11·74 per 1,000, which is higher than the corresponding rate in the previous year by '84, but lower than the average rate for the preceding decennial period by 3·79. The chief disabilities for which men were finally discharged from the army were constitutional syphilis 27 cases, or '64 per 1,000; debility 48 cases, or 1·14 per 1,000; tubercular diseases 46 cases, or 1·09 per 1,000; diseases of the nervous system 88 cases, or 2·09 per 1,000; these include 52 cases of mental disease, or 1·23 per 1,000; diseases of the circulatory system 77 cases, or 1·83 per 1,000; diseases of the digestive system 28, or '66 per 1,000; diseases of the organs of locomotion 27 cases, or '64 per 1,000; and injuries 37 cases, or '88 per 1,000. Compared with the return for the preceding year an increase is observed in some of the ratios of final discharge, among which may be mentioned constitutional syphilis, tubercular diseases, diseases of the nervous system, including mental affections, and injuries; there are also several orders of diseases in which the ratio of final discharge by invaliding has decreased, such as debility and diseases of the circulatory and respiratory systems.

*Officers.*—The average strength of officers is returned as 1,160. There were 925 attacks of sickness, 29 deaths, and 53 officers invalided to England. The ratio of prevalence of sickness was therefore 797·4, that of mortality 25·00,

and that of invaliding 45·69 per 1,000. Compared with corresponding ratios *Bengal.* in the preceding year an increase is observed in all three, being as much as 113·1 in ratio of sickness, 14·76 in that of death, and 15·83 in that of invaliding. It is stated that this general increase was principally due to the greater prevalence of enteric fever and other continued and malarial fevers, cholera, dysentery, and debility. Eruptive fevers were the cause of 13 attacks of illness, of these 4 were cases of small-pox, 4 of measles, 2 of roseola, and one each of cow-pox, scarlet fever, and dengue. The small-pox cases which were treated were two at Lucknow, and one at Nowgong and Umballa respectively; a fatal case in an officer on leave from his corps is reported. Measles occurred in Chakrata, Rawal Pindi, Sialkot, and Quetta, one case respectively. The scarlet fever case also happened at Quetta, and the case of dengue at Barrackpore. Enteric fever attacked 37 officers, and there were 8 deaths, being in the ratios of 31·9 and 6·89 per 1,000 respectively as compared with 20·5 and 3·41 in the preceding year, and as compared with 16·3 and 4·20 per 1,000, the admission and mortality rates among the non-commissioned officers and men in the year under report. The per-centage of mortality to attack was 21·6, that in the previous year having been 16·7; the mortality to attack among the men was 25·80 per cent. The cases were scattered over 18 stations as follows:—7 at Lucknow, 4 at Allahabad, 4 at Quetta, one fatal, 3 at Meerut, 2 at Fyzabad, one fatal, 2 at Sialkot, 2 at Meerut, both fatal, 2 at Muttra, 2 at Umballa, and one at each of the following stations:—Fort William, Chunar, Naini Tal, Kasauli, Lahore, Topa, Cherat, Ferozepore, and Murree, the last two being fatal. Cholera attacked 5 officers, 2 cases being at Gharial and one each at Rawal Pindi, Murree, and Allahabad, all were fatal. Malarial affections caused 157 cases of ague, 2 of malarial cachexia, and 12 of remittent fever, with one death. The ratio of prevalence for malarial fevers was 147·4 per 1,000 as compared with 143·3 in the previous year. Rheumatism caused 19 attacks of illness, equal to a rate of 16·4 per 1,000, a decline of 3·2. Among local diseases most of the sickness was due to affections of the digestive system, 118 cases, 55 of these were diarrhoea, and 24 hepatic disease. Injuries also were very frequent, 185 being recorded, the ratio being 159·5 per 1,000 as compared with 120·5 among the men. Two of the remaining deaths were due to simple continued fever, and one death respectively was caused by tetanus, valve disease of heart, pneumonia, cirrhosis of liver, abscess of liver, peritonitis, asphyxia from being buried in an avalanche, gunshot wound self-inflicted, fracture of base of skull from a fall from a horse, wound of throat self-inflicted, and gunshot wound in action. 3 deaths in addition are returned as cause unknown. The principal causes of invaliding were continued fevers 12 cases, 7 being enteric, dysentery 5 cases, malarial fevers 7, debility 11, and diseases of the digestive system 5 cases.

*Women.*—The average strength was 1,816, the number of admissions into hospital 1,388, and of deaths 40. The ratio of admission therefore was 764·3 per 1,000, and that of mortality 22·03, the former being lower than the corresponding rate in the preceding year by 18·5 and the latter higher by 5·07. Eruptive fevers were the cause of 9 admissions, which included 6 cases of small-pox and 3 of roseola. The small-pox cases occurred as follows:—Saugor 2 cases, and Bareilly, Jhansi, Lucknow, and Rawal Pindi one case respectively; all recovered. Enteric fever caused 19 admissions and 4 deaths, being in the ratios of 10·4 and 2·20 per 1,000 respectively, as compared with 5·5 and 1·09 in the previous year, and with the ratios among men 16·3 and 4·20 in the year under report. The per-centage of mortality to attack was 21 as compared with 20 in the previous year, and with 26 among the men; 4 cases occurred at Lucknow, 3 at Quetta, two fatal, 2 each at Rawal Pindi and Sialkot, and one each at Moradabad, Ranikhet, Meerut, Mooltan, Campbellpore, Murree, Allahabad, and Meerut, the last two being fatal. Simple continued fevers caused 59 admissions and one death. Sixteen cases of cholera occurred and 13 deaths. These comprised 7 at Murree, five being fatal, 5 at Rawal Pindi, four fatal, 3 at Gharial, all fatal, and one fatal at Calcutta. Malarial fevers caused 186 admissions, equal to a ratio of 102·4 per 1,000, which is lower than in the previous year by 17·9, and is less than a third of the ratio among the men in the year under report. Among the cases treated were 12 of remittent fever, three of which proved fatal. There were 4 admissions under septic diseases, including 2 of erysipelas, and 2 of septicæmia, one of which was fatal. Debility accounted for 447 admissions, but no death is returned under

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this head, the admission rate was 246·1 per 1,000. Rheumatism shows 22 cases, of which 4 were rheumatic fever. There were only 3 admissions for tubercular disease, but two of the cases terminated fatally; anaemia caused 35 admissions but no death. Among local diseases, affections of the nervous system caused 29 admissions, of which 14 were due to neuralgia, 5 to hysteria, and 5 to mental disease. There was one death from meningitis, and one from eclampsia. Ophthalmic diseases caused 50 admissions, over 40 being cases of conjunctivitis. Diseases of the circulatory system show only 14 admissions, but 3 deaths occurred, two from valve disease, and one from fatty degeneration of the heart. Diseases of the respiratory system caused 21 admissions, of which 15 were cases of bronchitis; there were also 3 cases of pneumonia, two fatal, 2 cases of pleurisy, and 1 of laryngitis. 183 admissions are recorded from digestive disorders, being in the ratio of 100·7 per 1,000 as compared with 122·0 in the previous year. The chief causes of admission were dyspepsia 53 cases, and diarrhoea 43 cases. Hepatic diseases show 26 admissions. 2 deaths occurred, one from enteritis and the other from cirrhosis of the liver. Diseases of the generative system were as usual very numerous, 212 admissions being recorded, the ratio, 116·7 per 1,000, is a good deal in excess of that in the previous year. The causes of admission were very various, among them were abortion 42 cases, and premature labour 13 cases; 2 deaths occurred, one from premature labour, and one from pelvic cellulitis. The remaining orders of diseases caused but little sickness, and the admissions for injuries only numbered 18, but 4 deaths are returned, 3 from heat apoplexy and one from hanging (suicide).

*Children.*—The average strength is returned as 3,478, the number of admissions as 1,595, and there were 190 deaths. The admission ratio therefore was equal to 458·6, and the death rate to 54·63 per 1,000. Compared with corresponding ratios in the preceding year a decrease of 103·3 per 1,000 has occurred in the admission rate, but there is an increase of 2·01 in the death rate. Eruptive fevers caused 111 admissions against 219 in the previous year. Small-pox gave 10 admissions, of which 2 cases, both fatal, occurred at Cawnpore, 2 at Lucknow, and one case at Allahabad, Dinapore, Saugor, Jhansi, Ferozepore, and Rawal Pindi respectively. Measles caused 82 admissions and 2 deaths, the admission ratio was 23·6 per 1,000, less than half that recorded in the preceding year. The disease was most prevalent in Quetta, as many as 59 cases having occurred there; the remaining cases were scattered over the Command. Among other admissions for eruptive fevers were 3 cases of scarlet fever and 2 of roseola. Enteric fever caused 7 admissions and 2 deaths as compared with 24 admissions and 3 deaths in the previous year. The cases occurred as follows:—2 at Ranikhet, 2 at Rawal Pindi, one fatal, and one at Fyzabad, Bareilly, and Sialkot respectively, and there was one death at Campbellpore. Simple continued fever gave 131 admissions and 3 deaths, Bareilly and Sialkot furnishing the latter, viz., 1 and 2 respectively. Cholera caused 23 admissions and 14 deaths as compared with 8 attacks and 7 deaths in the preceding year. Of the cases 17, with 11 deaths, occurred at Murree, 3, with one death, at Rawal Pindi, 2, both fatal, at Sialkot, and one case at Gharial. There were 38 admissions and one death from dysentery, and among other diseases of the first sub-group were 2 cases of diphtheria, one of which was fatal. Malarial fevers caused 193 admissions and 7 deaths, being in the ratios of 55·5 and 2·01 per 1,000 as compared with 76·0 and 1·69 in the preceding year. The cases comprised 176 of ague, with 1 death, 14 of remittent fever, with 5 deaths, and 3 of malarial cachexia, with one death. Septic diseases were represented by 5 cases of erysipelas, and sub-group V. by two cases of hydrophobia, both of which proved fatal. Among 12 cases of parasitic disease there was one fatal case of thrush. Among developmental diseases 6 fatal cases are returned as immaturity at birth, and out of 151 admissions for debility there were 19 deaths. Tubercular diseases caused 13 admissions and 9 deaths. Among local diseases affections of the nervous system caused 64 admissions and 49 deaths. The cases comprised 46 of convulsions, with 41 deaths, 8 of inflammation of the brain and its membranes, and 6 deaths, and there was one fatal case of laryngismus stridulus. Ophthalmic affections were the cause of 163 admissions, all but 3 being for conjunctivitis in some form. Diseases of the circulatory system were not represented, but diseases of the respiratory system caused 209 admissions and 27 deaths. As many as 183 of the admissions were for bronchitis, and the

remainder included 11 for pneumonia, 11 for croup, 3 for laryngitis, and one for empyema. The deaths were bronchitis 17 cases, pneumonia 5, croup 3, and laryngitis and empyema one respectively. Diseases of the digestive system caused 287 admissions and 36 deaths, being in the ratios of 82·5 and 16·35 per 1,000 respectively, which are considerably below the corresponding ratios in the preceding year. Diarrhoea was the principal cause of admission and mortality, 172 admissions and 24 deaths being shown under this head. Teething caused 69 admissions and 7 deaths. Hepatic diseases gave 6 admissions, with two deaths from abscess of the liver and one from jaundice; there was also one death from enteritis, and one from disease of the salivary glands. Under urinary diseases two fatal cases are returned, one from acute nephritis and the other from extravasation. The remaining orders of diseases caused very little sickness. 3 admissions under the head of poisons were, 2 from vegetable poisons and one for poisoned wound from stinging insects, all fatal. Injuries were 40 in number, of various kinds, and there were 3 deaths, one from drowning, one from heat apoplexy, and one from gunshot wound.

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**SANITARY CONDITIONS.**—From the reports of the Principal Medical Officers and medical officers in charge of station hospitals are extracted the following remarks on the health of the troops and the sanitary conditions in the different districts and stations.

**Presidency District.**—The general health of the troops serving at each of the stations in the district was good, and the sanitary state of the barracks occupied is reported to have been satisfactory. Cholera was very prevalent among the civil population of Calcutta, but among the troops there were only four deaths. The health conditions of Hastings, a thickly populated locality, not far from Fort William, which it was noticed in the previous year had been much improved, are now stated to be in a highly satisfactory condition owing to the recent sanitary improvements which have been carried out. At Fort William as well as at Barrackpore and Dum Dum the sanitary conditions were good. The water supply for all three of these garrisons is now obtained from the Fulta waterworks which supply Calcutta; it is reported to be of good quality. The reports from Darjeeling as to health and sanitation are also satisfactory. The station hospitals in the district are described as fine buildings, provided with all that is required, except in the case of the Calcutta station hospital at Alipore, where a separate ward for contagious diseases is much required; at present cases which need segregation have to be treated in tents, an arrangement which is far from desirable in very hot weather or during the rains, even when the tents are provided with thatched roofs and pitched on raised masonry platforms.

**Allahabad District.**—The Principal Medical Officer of the district reports that the health conditions were generally good, but the proportion of admissions to strength was higher than in the preceding year, mainly due to the prevalence of malarial fevers and venereal affections. Cholera was prevalent among the civil population of Allahabad, Cawnpore, Benares, Dinapore, and Chunar during the greater part of the year. At Allahabad the general sanitary condition was good, the barracks, double storied buildings, raised off the ground and well ventilated, afford ample accommodation. The hospital is also double storied and is satisfactory. The water supply is of good quality and taken from filter tanks in the infantry and artillery lines, but that for the hospital is taken from a well in the compound. At Fort Allahabad the general sanitary condition was good and the barracks in good order, but it is said that the position of the hospital is objectionable, being too near the infantry barracks. At Cawnpore the general health was good, except during the period following the rains. The barracks which are built in echelon are satisfactory and well ventilated. The hospital, about half a mile distant, was also in a satisfactory condition; but the medical officer in charge remarks that the hospital for infectious diseases, which is close to a road and open to it, as also the mortuary and hut for native followers, require enclosure. At Dinapore the barracks are of two kinds, permanent and temporary; the former are described as very satisfactory, and the drainage about them good; but the latter are said to be too close together, and being built parallel to each other to obstruct the wind one from the other; the surface drainage in the vicinity was not in good repair. At Benares the general condition of the cantonment was satis-

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factory, but the barracks though well situated are old, and one of them was stated to be in need of repair. At Chunar the barracks and hospital are reported as good and well situated, and the drainage very satisfactory. Cholera was present in the neighbourhood, but the troops were not affected.

*Oudh Division.*—The Principal Medical Officer reports that the general health conditions of the different stations in the district were fairly good. The climate throughout the year was not remarkable for any great deviation from the usual course. At Lucknow most of the barracks are of modern construction, and are very satisfactory as regards accommodation and ventilation. In the infantry lines, however, there are a few still existing single story barracks of old pattern, which are to be replaced by others on the new system. The general sanitary condition of the garrison is very satisfactory, the dry earth system is very carefully worked, the water supply is good, the hospitals and barracks in good order, the rations of good quality, and it is said that were it not for the excessive amount of venereal disease and the annual prevalence of enteric fever the health of the troops would compare favourably with that of any garrison. The military prison is in a good sanitary condition; a requisition was to be submitted for building a hospital kitchen which is thought to be necessary. At Fyzabad the barracks and hospital are satisfactory as to sanitary condition, ventilation is good, and drainage is by surface channels of masonry leading to the main ones, which are chiefly cuttings or nullahs running to the creek; some lead to absorption pits, the utility of which, it is said, is doubtful. The drinking water is good and abundant but rather hard, owing to the character of the soil. It is obtained from wells and first passed through a filter bed and then through Macnamara filters. The position of cantonments is rather defective owing to its being close to the river, the water from which when in flood finds its way into the station through nullahs, and on its subsidence after the rains leaves a vast expanse of damp ground. At Sitapur the general health of the troops was good, and nearly half the admissions were due to venereal disease. The barracks are in the centre of the cantonment; there are no lakes or swamps in the vicinity, and the land around is free from jungle. The drainage is by surface drains, which are kept clean and are in good order. Absorption wells formerly existing have been done away with and concrete tanks made to hold the water from bathrooms.

*Rohilkund District.*—The cantonments of Bareilly are said to be free from any obviously insanitary condition, but the city, which is about two miles distant, and to which the men freely resort, is in a very insanitary condition, and the neighbouring villages come under the same description. The barracks are single storied buildings in echelon, widely separated and raised on plinths they are in good repair, and the ventilation is good. The cells, however, are very hot in the hot weather, so that it is necessary to remove the men to the guard room during the heat of the day. At Shahjehanpur the sanitary condition of the cantonment as well as of the barracks and hospital was very satisfactory throughout the year. The only defects noticed were of a minor character, and were to be rectified during the ensuing year. Moradabad and the surrounding country are low lying, and it is stated that the question of continuing it as a military station is undecided, but, if it were to be, the garrison would be diminished, as it has been settled that certain barracks which were blown down in a great storm which occurred are not to be rebuilt. The drainage is said to be in an unsatisfactory condition, but to remedy this entirely would involve considerable expense, which will hardly be undertaken unless the station is to be a permanent one. At Raniikhet the year under report was not a healthy one. The weather up to the bursting of the monsoon was unusually hot and enervating by day, while the chills at nightfall were sudden and penetrating. The barracks and married quarters were in a satisfactory sanitary condition, and can afford sufficient accommodation; they are well ventilated, and the subsidiary buildings were satisfactory. In the standing camp most of the men were in tents, the permanent hill huts being taken into occupation as they were finished. It is hoped that all the huts will shortly be completed, as tents are not at all suited to young unseasoned soldiers in the hills during the rains, when if there is any wind it is impossible to keep them dry. At Chaubuttia at the beginning of the rains the water supply is always muddy, and contains a good deal of vegetable organic matter

washed into it by the rains, which were unusually heavy in the season under report. To meet this filtering beds were made in connexion with two of the springs from which the water is obtained. The sanitary conditions of barracks and subsidiary building were well attended to. At Naini Tal most of the convalescents sent up from the plains during the hot weather recovered their health and were able to rejoin their regiments in the plains. The sanitary condition of the barrack bungalows was generally good, and the ventilation of some of them is very good, though of others only fairly so. The barracks are scattered, but on the whole occupy a very good position, and are free from any causes likely to exercise a deleterious influence on the health of the men.

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*Saugor District.*—At Jubbulpore it is said that the health of the troops was good on the whole, and the mortality not excessive. Regarding the barracks, it is remarked that those occupied by the artillery have, as regards elevation, a site inferior to those occupied by the infantry, and during the rains the ground has a tendency to become swampy in consequence; but the barracks themselves in general plan and construction are satisfactory, with spacious and lofty rooms. The drainage in the infantry lines is satisfactory, but that in the artillery lines, through want of fall, is somewhat defective. At Saugor the health of the troops during the year compared favourably with that in the previous year, but malarial fevers were still very prevalent, as also venereal disease. The barracks and hospitals appear to have been in a satisfactory condition, but it is stated that the accommodation in the hospitals was at times insufficient, and is inconveniently separated, a committee therefore was about to be appointed to consider the whole question of hospital accommodation. All other sanitary conditions were satisfactory, except that the men's lavatory is too far from the infantry barracks. At Nowgong the accommodation in barracks was sufficient during the year, but in hospital it was not so at a certain period during the rains, and it was necessary to utilise a tent for mild cases. The situation of the barracks is good, being on a slight elevation. Ventilation is good and sanitary conditions generally satisfactory. Some alterations were made in the cells during the year which the medical officer disapproves of as regards the hot weather, though in the cool season they are satisfactory. The drainage is said to be defective to some extent, the larger drains being cut out of the soil are liable to variations of level during the rains, but this is remedied from time to time as far as possible. All other sanitary conditions appear to have been satisfactory. At Pachmarhi it is stated that the year under report was a favourable one. The sanitary conditions were generally good, and the barracks satisfactory, except that from their position the verandahs at the front are exposed to the full force of the monsoon, and are practically useless during the rains. The barracks would also be much improved by the roofs being raised, and a row of clerestory windows on both sides. The hospital, which is one of the barrack buildings, also needs this. Quarters for medical subordinates and stores are also needed, as well as the provision of a lavatory to the ward for women and children.

*Gwalior District.*—The general health of the troops in the district was fairly good, but it is stated that at Jhansi, before the rains, the weather was intensely hot, which, no doubt, exercised an unfavourable influence on the health of the British troops. The sanitary conditions of Jhansi were generally good, the barracks are well situated, and their aspect and surroundings good. They are built of brick with tiled roofs, but it is said that the tiles are not of very good quality, and consequently they leak very much during the rains. The new barracks for the artillery were nearly completed; there are five blocks for single men, the arrangements of which were described in last year's report. There is also a block of nine quarters for married men, which, with all subsidiary buildings, were almost completed at the time of report. The hospital is well situated and ventilated, but it did not afford sufficient accommodation, during the latter part of the year particularly, so to prevent overcrowding, sick had to be treated in the verandahs and in tents. As the strength of the garrison was about to be increased application was made for increased accommodation by adding to the present hospital or by constructing another. At Sipri the barracks and their surroundings were generally in a sanitary condition, but it is said that a great deal of land to the west, on a level with the buildings, is under cultivation, which may probably be a source of malarial sickness after

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the rains. The district generally is considered by the natives to be extremely healthy; but owing to the tenacious character of the black soil, and the large amount of vegetation produced by it, there is a good deal of malaria following the rains which might be, to some extent, prevented by an efficient system of drainage which could be readily carried out by deepening the nullahs and removing obstacles from their beds.

*Meerut District.*—The general health of the troops was fairly good during the year. The temperature in the district during the hot months was above the average, and the rains were somewhat delayed, but continued longer than usual. The sanitary condition of the cantonment of Meerut was generally satisfactory, any minor defects of conservancy being remedied as soon as they were brought to notice, and the barracks themselves were in a good state of sanitation, and were carefully attended to. At Fatehgarh the general health in cantonments was good. The accommodation in barracks was ample and ventilation good; the roofs of the barracks are thatched, but during the year Allahabad tiles were authorised, and the roofs are therefore being gradually renovated with these, two buildings at a time. At Agra the barracks in cantonments are in good sanitary condition, as also those in the fort. It is remarked that during and immediately after the rains the water in the river runs to within a 100 yards from the outer ditch of the fort, leaving on its subsidence large tracts of mud in the immediate neighbourhood. At Muttra the two new barrack bungalows, which were opened in the preceding year, were found to be very satisfactory in all respects, and two more blocks were in process of construction; the remaining barracks are very old and difficult to keep clean; there is, however, nothing prejudicial to health in their occupation. At Delhi it is said that the barracks may be considered good as regards construction, form, and position. The ventilation of the buildings themselves is sufficient, but the fort being shut in by high walls the circulation of air is impeded. The drainage of the fort is by surface drains which communicate with deep covered ones, and are well ventilated. As at Agra, the banks of the river in proximity to the fort are submerged during the rains, and large tracts of country are rendered marshy; this is doubtless a source of malaria. At Roorkee the health of the troops was fairly good, but cases of enteric fever occurred which it is said could not be attributed to any insanitary condition in barracks or in the cantonment. At Landour the health of the convalescents was satisfactory, and the sanitary conditions of the place were generally good. At Chakrata the health of the troops was fairly good, and it is said that the summer camp at Kailana hill was a complete success. The men forming it had mostly suffered greatly from malarial fevers, and derived very great benefit from their residence in the hills.

*Sirhind Division.*—At Umballa the sanitary condition of barracks was satisfactory, and no change took place in the accommodation, except that it was ruled that the inner verandahs of the cavalry and infantry barracks on one side might be used as additional dormitories during the winter months. At Jullundur the sanitary conditions of barracks, hospital, and outbuildings were generally good, but on account of the ground in the cantonment and its vicinity being so very level some difficulty is experienced with the surface drainage, especially after heavy storms. The accommodation is generally sufficient, but the need of a separate hospital for women and children, as well as of an infectious ward, is brought to notice. At Subathu the barracks, hospital, &c. are of modern construction, well suited to the climate, and in good sanitary condition. Enteric fever occurred during the year, and it was thought that it might partly have been due to the existence of some disused filth pits near the station; measures were therefore taken to prevent this for the future. At Solon some overcrowding is reported to have occurred in certain of the men's barracks which necessitated some of the men being placed in tents. In some of the barracks, particularly the guard-room, ventilation was found to be defective; this was accordingly brought to notice. At Kasauli the sanitary condition of the military portion of the station was satisfactory, with the exception of certain minor defects, which were discovered and rectified. At Jutogh the infantry barracks were completed, and a freshwater supply from a spring on the north side of the cantonment was taken into use; the quality

is said to be excellent. The report of the sanitary condition of Daghshai is *Bengal*. satisfactory in all respects.

**Lahore Division.**—The Principal Medical Officer reports that the health conditions under which the troops were placed during the year were favourable. The climate presented only one deviation from its usual character, a somewhat scanty rainfall, which in some places was only about half the usual amount. At Mean Meer the sanitary condition of the barracks and hospital appears to have been satisfactory; but on account of the level nature of the ground some difficulty arises in regard to surface drainage, no evil effects, however, are known to have resulted from this during the year. At Ferozepore also the sanitation of quarters and hospital was good, and the water supply is ample, but in quality it is said to be generally rather hard. At Mooltan a few cases of enteric fever occurred during the year, but there was no defect in the water supply or any sanitary condition which could lead to the presumption that the disease was contracted in barracks. At Amritsar, both in the cantonment and Fort Govindgarh, there was ample accommodation in barracks, the sanitation of which was carefully attended to. At Bhagsu the barracks and hospitals are said to be satisfactory buildings, but for the hospital it is suggested that a small dining-room for patients and some servants' quarters would be advantageous. At Dalhousie the barracks afford ample accommodation, also the hospital, but of the latter it is said the wards are not sufficiently warm, and the baths and lavatory are rather too distant.

**Rawal Pindi District.**—The health of the troops was much affected, as has already been shown, by the occurrence of cholera in an epidemic form in Rawal Pindi and Murree, and also by the prevalence of enteric fever. The sanitation of Rawal Pindi was carefully attended to, and was kept in a satisfactory state. The hospital was in good sanitary condition, but there was so much sickness during the latter months of the year that there was not sufficient accommodation for the patients, and it was necessary to utilise tents. The visitation of Murree by cholera drew closer attention to the overcrowding of the dépôt barracks and Cliffden family quarters, which had come about by degrees, and the serious drawbacks attending it being recognised the number of occupants has been considerably reduced. The barracks and quarters were not specially faulty, but at Cliffden the blocks were in some places rather close or too near the hill slope. Demolition of certain rooms has been carried out, and others not very well situated have been turned into store-rooms. The shelter, other than a tent provided for the troops scattered over the hills beyond Murree, consists of small huts with roofs, and framework of iron filled in with stonework and floored with wood. They make excellent habitations, very suitable in every way to the locality and climate. At Sialkot the health of the troops did not differ much from that in the previous year. Ague was the prevailing disease, and occurred almost entirely in men who from time to time came from Amritsar, Sialkot itself being responsible for but very few admissions from this cause. The sanitary conditions were good. There was no want of cleanliness; drinking water was good, and there were no defects in drainage. The barracks were fully occupied, but not to the extent of overcrowding. At Campbellpore the general sanitary conditions were good. The roofs of the barracks were being raised, and some, indeed, were completed. In addition to the above some other minor improvements were in progress.

**Peshawar District.**—The Principal Medical Officer reports that the sanitary conditions connected with the health of the troops at Peshawar were on the whole satisfactory during the year. There was an abundant supply of drinking water of excellent quality; the rainfall was moderate during the year, and the cold weather was long and bracing. Great attention was paid to the clothing of the troops, the night guards being very carefully looked after in this respect. Great benefit was derived from the change of climate to Cherat, where some of the European troops in Peshawar and Nowshera were quartered from April to October. It is stated that the partial restrictions which were in force some time ago with regard to the excessive irrigation and cultivation in the Peshawar cantonments and vicinity have been gradually withdrawn. The matter has been made the subject of correspondence, and it



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is hoped that when leases fall in steps will be taken to put an end to this irrigation and cultivation in proximity to barracks which is justly considered highly prejudicial to health. Compared with the previous year the health of the troops was not so good. An outbreak of cholera took place in August, but it is thought that the disease may have been imported. From September to the end of the year malarial fevers were very prevalent, probably due to want of seasonal rains succeeding a period of intense heat. At Nowshera it is stated that the health of the troops was excellent, the sanitary conditions of barracks, hospital, and cantonment satisfactory, and the water supply exceptionally good. The health of the troops at Cherat was good, and this is attributed in great measure to the better housing of the troops and the excellent conservancy and sanitary arrangements. Barracks for the men were steadily in course of construction during the year, and were being pushed on rapidly in order that the barrack accommodation for the next season should be increased to as great an extent as possible.

*Quetta District.*—The Principal Medical Officer reports that the health of the troops during the year, when compared with that of the three previous years, cannot be considered unsatisfactory. Mortality, however, was greater, but this was owing to the prevalence of enteric fever. Malarial fevers show a marked decrease as compared with previous years, and it is thought that, without doubt, this immunity from malarial disease may be attributed partly to the long residence of the majority of the men in the cold hill climate, and partly to the benefit effected by the steady planting of trees, such as willows, poplars, &c. during late years. The decrease in malarial affection was, however, counterbalanced by an increase in respiratory affections, which may be considered as distinctly characteristic of the climate of Quetta, where the great daily range of temperature is a prominent factor in the causation of this class of disease. The sanitary condition of the barracks and hospitals is reported to be fairly satisfactory, but that of the place is yet far from perfect, neither the water or milk supply being satisfactory. The station itself also is still in its infancy, buildings, in many and different directions, being under construction. In addition to the pure drinking water which is conveyed to barracks in packals from a covered spring properly protected there are several open water courses which pass through the barracks, and being near at hand may at times be drunk by the men. It is stated that a project is in course of execution to bring good water in pipes from the Harra pass, several miles away, direct to taps in cantonments. Until this is completely carried out there must always remain a doubt as to the purity of the water supply. With regard to milk supply, which it is difficult to obtain of good quality, it is suggested that goats be purchased regimentally with a view of providing men and married families with a supply on which greater dependence can be placed than that purchased from the inhabitants. During the year a cow-shed was built in close proximity to the hospital, to accommodate 16 cows; this was to be enlarged as early as practicable to accommodate 40 cows. When this is completed the authorities will be able to obtain, under strict supervision, an ample supply of pure milk for the use of the sick in hospital.

## II.—MADRAS.

Madras.

The average strength of warrant officers, non-commissioned officers, and men serving in the Madras Command was 14,073, being in excess of the number in the preceding year by 2,335.

In the subjoined table will be found the most important of the health statistics of this force during the year :—

| 1888.<br>Average<br>Strength. | Admissions. | Deaths          |              |        | Invalids   |                     | Average daily Sick. | Ratios per 1,000 of Strength. |         |                     |                              |                  |
|-------------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|-------------------------------|---------|---------------------|------------------------------|------------------|
|                               |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally discharged. |                     | Admissions.                   | Deaths. | Invalids sent Home. | Invalids finally discharged. | Constantly Sick. |
| 14,073                        | 18,984      | 220             | 7            | 227    | 392        | 187                 | 1081.17             | 1340.7                        | 16.13   | 27.83               | 13.28                        | 76.81            |

Compared with the results shown in a similar table given in the report for the preceding year, and with those of the average of the previous ten years, a marked increase is observed both in admission and mortality. This increase is entirely due to the health statistics of Upper Burma being in the year under report for the first time included in the annual returns, and to the proportion of sickness and mortality to strength in that district being, as will presently be shown, very high, and relatively very much greater than in any other district. If, however, these statistics be excluded accurate comparison can be made with results in previous years.

The average strength during the year, exclusive of that of Upper Burma, was 12,217, the number of admissions 14,600, the deaths 130, and the average number constantly sick 895. The admission rate, therefore, was 1195.0, the death rate 10.64, and the ratio of constantly sick 73.26 per 1,000. Compared with corresponding ratios in the preceding year the admission rate has declined by 46.6, the death rate by 3.16, and the constantly sick rate by 4.00, while compared with average similar ratios for the previous ten years there is a decrease of 25.3 in the ratio of admissions, and one of 2.89 in that of mortality; but there is an increase of 8.04 in the ratio of constant inefficiency through sickness. The average sick time to each soldier was 26.81 days, being shorter than in the preceding year by 1.39 days, but longer than the corresponding average period for the previous ten years by 3.1 days. The average duration of each case of sickness was 22.43 days, which is shorter than the corresponding period in the previous year by about a quarter of a day, but longer than the decennial average period by nearly three days.

The loss to the Command, including Upper Burma, by death and invaliding to England was 612 men, and the total loss to the service by death and final discharge from the army as medically unfit for further service was 414, which is equal to a ratio of 29.41 per 1,000, an increase of 2.23 on the result in the previous year.

In Abstract XXIII. is a table taken from the report of the Principal Medical Officer, Surgeon General Sir James Hanbury, K.C.B., showing the more important of the health statistics of the different districts and stations in the Command. It will be observed that the statistics of sickness in Upper Burma are now included in this table. By far the highest admission ratio in any circle was 2367.4 per 1,000 in the Myingyan and Mandalay district, or Upper Burma, the next being 1560.6 in the Madras district, which is slightly higher than the corresponding ratio in the preceding year; the lowest admission ratio was 1053.8 in the Southern district, which shows a decline of

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293·2 from the previous year's rate; the ratio next above was 1096·1 in the Lower Burma district, a decrease of 369·9. Mortality was highest also in the Myingyan and Mandalay district, the rate being 48·49 per 1,000, the next ratio being 13·16 in the Lower Burma district, which is rather higher than the corresponding rate in the previous year; the lowest annual death rate was 5·98 per 1,000 in the Nagpore district (which was transferred to the Bombay Command in the month of October); the next ratio was 6·96 in the Bangalore district; both these ratios have declined as compared with corresponding ratios in the preceding year. Taking individual stations which had an average strength of 100 men or over, the highest admission rates are found in three of the stations in Upper Burma, 3523·5 per 1,000 in Bhamo, 2042·7 in Mandalay, and 2032·6 in Myingyan; the three highest death rates were also in these stations, 83·72, 50·16, and 47·78 in Myingyan, Bhamo, and Mandalay respectively. These statistics are, however, only for a period of nine months from the 1st April. Malarial fevers appear to have been the chief cause of the high sick rates. Exclusive of Upper Burma the highest admission rate in any station was 1633·1 per 1,000 at St. Thomas's Mount, as compared with 1433·4 in the previous year, and with 1322·8 the average rate for the previous ten years. The next highest rate was 1569·1 in Bellary, which is above the decennial average rate and the rate in the previous year. The lowest admission rate was 891·7 per 1,000 among the troops stationed at Wellington, which is lower than the last year's rate by 288·8; the ratio next above was 1003·5 at Belgaum, and then 1004·9 at Rangoon, both of which are below the average rates and the corresponding rates in the previous year. The highest mortality rate was 20·27 per 1,000 at Malliapooram, dependent on 3 deaths in a small average strength; in the previous year also this station gave the greatest mortality rate, both years being considerably above the average rate. The next rate was 17·98 at St. Thomas's Mount, a good deal above the average rate, and above the last year's rate by 4·33; this is followed by a rate of 15·58 at Thayetmyo, which is below the rate in the previous year by 3·11, and somewhat below the average rate; the lowest mortality rate was in Belgaum, and was 2·61 per 1,000, a considerable decrease from the rate in the previous year and much below the average rate; in Kamptee there was also a low rate, 5·08, much below similar rates in previous years, and in Madras and Wellington 6·11 and 6·37 respectively, the former much lower and the latter very slightly in excess of that in the preceding year. At the convalescent depôts the admission and mortality ratios compare favourably with those of the previous year.

The principal health statistics of the different arms of the service and of the various regiments, batteries, or corps are shown in a table taken from the report of the Principal Medical Officer and given in Abstract XLI.

In the cavalry the ratio of admission was 1305·2 per 1,000, being an increase of 257·0 on the corresponding ratio in the preceding year, the mortality rate was 13·91, a decline of ·55, and the constantly sick rate, 78·26, an increase of 8·83. The average sick time to each soldier was 28·64 days, and the average duration of each case of sickness 21·94 days, the former being longer by 3·30 days and the latter shorter by 2·24 days than the corresponding period in the previous year. The cavalry regiment which had the highest admission and constantly sick rates was the 21st Hussars quartered at Bangalore, 1400·7 and 86·36 per 1,000 respectively, while in the 7th Hussars stationed at Secunderabad these ratios were 1194·2 and 68·34. The highest mortality was in the latter regiment, 14·39 per 1,000, the ratio in the former being 12·09. In the artillery the admission rate 1363·7, and constantly sick rate 75·12 per 1,000 are higher than corresponding ratios in the previous year by 176·0 and 8·63 respectively; the death rate, 11·45, shows a fractional decrease. The average sick time to each soldier was 27·49 days, and the average duration of each case of sickness 20·16, the former being longer than the corresponding period in the previous year by 3·22 days, and the latter shorter by about a quarter of a day. Among individual batteries whose average annual strength was over 100 men the highest admission rate, 1655·4 per 1,000, was in P Battery, 1st Brigade, quartered at Bangalore, the next being 1600·0 in D Battery, 1st Brigade, principally at Kamptee, followed by 1560·0 in J Battery, 3rd Brigade, at St. Thomas's Mount; the lowest ratio was 1000 per 1,000 in R Battery, 1st Brigade, stationed at Belgaum, the next above being 1006·5

in M Battery, B Brigade, at Bangalore, and 1059·8 in No. 4 Battery, 1st Brigade, North Irish Division, quartered at Madras. The highest mortality ratio was 26·66 per 1,000 in J Battery, 3rd Brigade, followed by 25·00 in No. 4 Battery, B Brigade, stationed at Secunderabad, and by 13·70 in M Battery, 2nd Brigade, also at Secunderabad. In six batteries there was no mortality, and there were low ratios in several, as 6·45 per 1,000 in M Battery, B Brigade, 6·76 in P Battery, 1st Brigade, and 6·94 in S Battery, 1st Brigade, quartered at Bellary. The highest ratio of constant inefficiency through sickness was 87·84 per 1,000 in P Battery, 1st Brigade, the next being 86·09 in J Battery, 4th Brigade, at Bangalore, and 83·87 in M Battery, B Brigade; the lowest ratio of constantly sick was 60·40 per 1,000 in U Battery, 1st Brigade, quartered at St. Thomas's Mount, the next above being 62·11 in R Battery, 1st Brigade, and 66·66 in J Battery, 3rd Brigade. In the infantry the admission ratio was 1373·2 per 1,000, being higher than the corresponding rate in the preceding year by 124·5, the death rate was 17·14, an increase of 6·05, and the constantly sick rate was 76·43, a fractional decrease. The average sick time to each soldier was 27·97 days, and the average duration of each case of sickness 20·37 days, the former being shorter by ·12 and the latter by 2·13 days than the corresponding period in the previous year. Excluding corps whose average annual strength was less than 100 men the highest admission ratio in any regiment was 2303·7 per 1,000 in the 2nd Battalion, Cheshire Regiment, next 2236·1 in the 1st Battalion, Rifle Brigade, and then 2137·6 in the 2nd Battalion, Royal Munster Fusiliers, all these regiments were for the most part of the year in Upper Burma; the lowest ratio of admission was 985·8 in the 2nd Battalion, Somersetshire Light Infantry, at Belgaum, the next 996·9 in the 1st Battalion, Hampshire Regiment, at Secunderabad, and 1016·4 in the 2nd Battalion, Norfolk Regiment, a short time in Upper Burma. The highest mortality ratio was 75·14 per 1,000 in the 1st Battalion, Rifle Brigade, the next 40·69 in the 2nd Battalion, Royal Munster Fusiliers, and the third, 37·54, in the 2nd Battalion, Cheshire Regiment; the lowest death rate was 2·19 per 1,000 in the 2nd Battalion, Somersetshire Light Infantry, the next above being 6·26 in the 1st Battalion, Hampshire Regiment, and then 6·41 in the 1st Battalion, Cheshire Regiment, in Lower Burma. The highest ratio of constant inefficiency through sickness was 125·22 per 1,000 in the 1st Battalion, Rifle Brigade, the next, 98·84, in the 2nd Battalion, Royal Munster Fusiliers, followed by 84·79 in the 1st Battalion, Duke of Cornwall's Light Infantry, at Bellary; the lowest constantly sick rate was 49·18 per 1,000 in the 2nd Battalion, Norfolk Regiment, the next above being 57·99 in the 2nd Battalion, Middlesex Regiment, quartered at Kamptee, and then 60·48 in the 1st Battalion, Hampshire Regiment.

The following table has been prepared to show as far as possible the influence of age on sickness and mortality among the troops during the year.

| Ages.                 | Average Strength. | Admissions. | Deaths in Command. | Invaliding. | Ratios per 1,000 of Strength. |         |             |
|-----------------------|-------------------|-------------|--------------------|-------------|-------------------------------|---------|-------------|
|                       |                   |             |                    |             | Admissions.                   | Deaths. | Invaliding. |
| Under 20 years -      | 438               | 391         | 1                  | 2           | 892·6                         | 2·28    | 4·56        |
| From 20 to 24 years - | 6,646             | 10,462      | 82                 | 190         | 1574·2                        | 12·33   | 28·59       |
| " 25 " 29 " -         | 4,708             | 6,129       | 102                | 131         | 1301·8                        | 21·66   | 27·82       |
| " 30 " 34 " -         | 1,369             | 1,176       | 22                 | 48          | 859·0                         | 16·07   | 35·06       |
| " 35 " 39 " -         | 552               | 385         | 5                  | 15          | 697·4                         | 9·06    | 27·17       |
| Over 40 years -       | 181               | 116         | 8                  | 6           | 640·8                         | 44·20   | 33·15       |
| Not stated -          | 179               | 335         | —                  | —           | —                             | —       | —           |
| Total -               | 14,075            | 18,994      | 220                | 392         | 1349·7                        | 15·63   | 27·85       |

The admission ratio among men under 20 years of age was low, but that among men between 20 and 25 years of age was nearly double, and was the

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highest ratio for any quinquennium of age. Between 25 and 30 years of age the ratio declined, and still further through the succeeding quinquennium. In the preceding year also the results obtained were very similar to these. The same may be said with regard to mortality, for though the death rates of men between 25 and 30 years of age and between 30 and 35 differ from the similar rates in the preceding year, yet they are, as they also were in that year, the highest mortality ratios of any age excepting among men over 40 years of age, where a high rate is found owing to 8 deaths in a small average strength. The next table is given to show as far as possible the influence of length of service in the country on the sickness and mortality among the troops during the year.

| Length of Service.     | Average Strength. | Admissions. | Deaths. | Invaliding. | Ratios per 1,000 of Strength. |         |             |
|------------------------|-------------------|-------------|---------|-------------|-------------------------------|---------|-------------|
|                        |                   |             |         |             | Admissions.                   | Deaths. | Invaliding. |
| Under 1 year - -       | 2,456             | 4,010       | 26      | 43          | 1632·7                        | 10·58   | 17·50       |
| From 1 to 2 years - -  | 2,125             | 2,790       | 43      | 71          | 1154·2                        | 17·73   | 29·60       |
| " 2 „ 3 - -            | 2,942             | 3,954       | 33      | 89          | 1344·0                        | 11·21   | 30·25       |
| " 3 „ 4 - -            | 1,435             | 2,129       | 22      | 62          | 1483·6                        | 15·33   | 43·20       |
| " 4 „ 5 - -            | 1,511             | 2,337       | 40      | 27          | 1546·6                        | 26·47   | 17·87       |
| " 5 „ 10 - -           | 2,600             | 2,979       | 45      | 87          | 1141·8                        | 17·24   | 33·34       |
| 10 years and upwards - | 516               | 451         | 11      | 12          | 874·0                         | 21·32   | 23·25       |
| Not stated - -         | 179               | 335         | —       | —           | —                             | —       | —           |
| Total - -              | 14,073            | 18,994      | 220     | 392         | 1346·7                        | 15·63   | 27·65       |

From this table it will be observed that the highest admission ratio was among men in their first year of service in the country, and that the ratio among men in their second year of service is considerably below it, after this a steady increase of admission rate is observed through the third, fourth, and fifth years of service in the country, after which time the rate rapidly declines. These results are not very similar to those in the preceding year, when the highest admission ratio was among men in their fourth year of service, instead of the first as in the year under report, and when the ratio of admission of men in their first year was comparatively low. Mortality gave the highest ratio among men in their fifth year of service, next among men over ten years' service, then men in their second year, followed by men between five and ten years' service. No regular sequence of ratios is observed, and in the previous year this was also the case.

In Abstract XXI. the admissions, deaths, &c. in the different groups and orders of diseases are given, and in Abstract XXII. the relative prevalence of sickness and mortality from them in each of the administration circles.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—There were 19 admissions and one death recorded under the head of *eruptive fevers*. Small-pox was the cause of 9 of these, including the fatal case. The ratios of admission and mortality for small-pox were '6 and '07 per 1,000 as compared with nil in the previous year, but the admission ratio is identical with the average rate of the preceding five years, and the death rate is higher. Four of the cases occurred at Bangalore and five at Secunderabad, one of which died. The remaining admissions for eruptive fevers comprised six for chicken-pox, three for measles, and one for epidemic rose rash.

*Enteric Fever* caused 104 admissions and 32 deaths. The admission ratio was 7·4 and the death ratio 2·27 per 1,000, which are below the corresponding ratios in the preceding year by 4·9 and '71, and below the average ratios for the preceding five years by 3·1 and '45 respectively. The mortality to attack was at the rate of 30·7 per cent., the rate in the previous year having been 24·3. In Abstract XXIV. is a table, taken from the report of the Principal Medical Officer, which shows the stations in the Command at which the admissions

and deaths took place in each quarter of the year. This table shows that as is generally the case the greatest incidence of enteric fever took place in the third quarter of the year, 55, or rather more than half the total number of admissions, and half the deaths being recorded in this quarter. In the second and fourth quarters there were the same number of attacks, 18 each, but there were 8 deaths in the former and four in the latter. In the first quarter there were 13 attacks and 4 deaths. The disease occurred in 16 stations, and 2 cases occurred among troops on the march. With the exception of Secunderabad and Bangalore, which were also most affected in the previous year, the attacks were not numerous at any station. At Secunderabad there were 41 cases and 14 deaths, the most at any station, still these attacks compare favourably with 91, the number in the previous year, but the mortality to attack was greater, being 34.1 per cent. as compared with 17.6. There were 12 cases and 4 deaths in the North Station hospital in which the cavalry, the 7th Hussars, were treated. In the previous year there were 61 admissions and 8 deaths. The medical officer in charge thinks that the additional year's service in India had some effect in diminishing the number of cases. He states also that the disease was milder in type, and that three of the fatal cases were complicated with other affections; the average age was 22 years. In the Central Station hospital 6 cases were treated, of which 2 died; it is said that they were all severe. In the South Station hospital there were 23 cases and 8 deaths, but the medical officer thinks that owing to difficulty of diagnosis of milder forms of the disease many cases are returned as remittent or simple continued fevers, especially during first months of the rainy season. He states also that, as is always the case, the last-joined regiment suffered most, 15 cases having occurred in the 2nd Battalion, Bedfordshire Regiment, 6 in the 1st Battalion, Hampshire Regiment, and the remaining two cases in men of other regiments recently arrived in the station. He adds that all the cases admitted were between 20 and 30 years of age, and within these limits the disease was fairly impartial in distribution. At Bangalore there were 35 cases and 10 deaths, as compared with 31 and 11 in the previous year. 22 of the cases were treated in the North Station hospital, and of these 7 died. The greatest number of cases took place between July and October. The medical officer in charge thinks that the men most liable to enteric fever are those who frequent the bazars and eat unwholesome food or drink bad water. Upper Burma contributed 7 admissions for this disease, among which were 3 deaths. The admissions were 3 at Myingyan, 2 at Shwebo, 1 at Bhamo, and 1 at Salenmyo. The administrative medical officer reports that the cause was in no instance traceable, and he adds that the general freedom from enteric fever throughout the country is most remarkable considering its insanitary condition; indeed, sanitation may be said to be practically non-existent. In Mandalay not a case occurred, yet the European troops were located within the city walls, on the site of the old native town in which noisome and neglected cesspits in thousands covered the whole area, and were the only means adapted for the disposal of excreta. At Kamptee there were 4 cases of enteric fever, one fatal. It was thought that they might probably be due to neglect in carrying out the dry earth system of conservancy, as otherwise the sanitary condition of the lines is excellent. At Wellington 4 cases occurred, all of which recovered, one case is said to have been contracted in Madras, but the other three occurred in the station, they were all of average severity, 2 cases occurred in Poonamallee, but at an interval of seven months. There were also two cases at Bellary, one contracted in the station and one away from it, but cause not known. At Thayetmyo also there were two cases contracted in the station, but their origin was not discovered. In addition to the above there were single cases, fatal, at Cannanore, Malliaporam, Sitabuldi, and Toungoo respectively, and one case, which recovered, at Belgaum.

*Other Continued Fevers.*—835 admissions are returned, and there was one death. The admission ratio was 59.3 per 1,000, the death rate .07, and the constantly sick rate 2.77. If the sickness from these fevers in Upper Burma were excluded the admission rate would be only 51.8 per 1,000, a decline of 8.5 on the previous year's rate, and one of 22.9 on the average rate of five years. The greatest prevalence of these fevers was, as also was the case in the

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previous year, in the Madras and Secunderabad districts, the ratios were 103·9 and 86·1 per 1,000 respectively; the lowest ratio was 10·7 in the Nagpore district, the next above being 17·1 in the Southern district. Compared with corresponding results in the preceding year there was an increase of 20·9 in the ratio of prevalence in the Madras district, and a slight one in that of Lower Burma. In all other districts a decline was observed, 21·3 in the case of Nagpore, 20·4 in that of the Southern division, 20·3 in the Secunderabad district, and 5·6 in the Bangalore division.

*Cholera.*—There were 54 admissions for cholera and 40 deaths, being in the ratios of 3·9 and 2·84 per 1,000 respectively. However, in the Madras Presidency proper only 2 cases occurred, all the rest being in Burma, and all those but four in Upper Burma. In Abstract XXV. is a table taken from the report of the Principal Medical Officer showing the stations at which the admissions and deaths from cholera took place in each of the four quarters of the year. The greatest seasonal prevalence was in the second quarter of the year, when there were 42 cases and 30 deaths, next in the third, 10 cases and 8 deaths, while in the first and last quarters there was only one case each. The greatest incidence of the disease at any one station was at Mandalay, 15 cases and 9 deaths. The cause could not be definitely ascertained, but the disease existed in the town, and was prevalent in many stations over the country. In the table, 12 cases and 7 deaths are shown as having occurred at Myingyan; these, however, were not among the garrison of that station, but among a detachment proceeding down the river from Mandalay to Rangoon. The disease broke out on board ship, and on arrival at Myingyan the troops were disembarked and placed in cholera camp four and a half miles from the station. Eight of the cases occurred before disembarkation, and the remainder in camp. At Fort Stedman there were 6 cases and 5 deaths; at Koni, Shan States, there were 4 cases and 3 deaths, the disease was prevalent in the surrounding villages; and at Bhamo, 4 cases and 2 deaths. The four cases in Lower Burma comprised two at Toungoo, which recovered, and one at Rangoon and Thayetmyo respectively, both of which were fatal. In Madras there was one case at St. Thomas' Mount and one at Bellary, the latter fatal. The remaining admissions and deaths took place among troops on the march. It will be seen that the deaths exceed the admissions, as five deaths, it is recorded, occurred out of hospital. This will raise the number of men attacked with cholera to 59.

*Dysentery.*—789 admissions are recorded and 15 deaths, the ratios being 56·1 and 1·07 per 1,000 respectively for the whole Command. Excluding Upper Burma there were 624 admissions and 10 deaths, or 51·0 and ·82 per 1,000 respectively, being lower by 11·0 and ·12 than in the previous year. In Abstract XXVI. is a table in which may be seen the prevalence of dysentery in each of the divisions of the Command, and in Abstract XXVII. there is a table which shows the prevalence and mortality from this disease in each quarter of the year. These tables are taken from the report of the Principal Medical Officer. The greatest prevalence of dysentery was in Burma, the admission ratios being 88·9 for Upper Burma, and 86·0 per 1,000 for Lower Burma. The lowest ratio of prevalence was 21·5 in the Nagpore district, the next above being 29·2 in the Southern district. In the preceding year the highest ratio of prevalence was in the Secunderabad district, and the lowest in the Nagpore district. Compared with corresponding results in the previous year a considerable decrease of admission rate has occurred in the Secunderabad district, and to some extent in the Southern and Bangalore districts, but in the other divisions an increase is observed. Mortality varied from 2·81 per 1,000 in the Madras district to nil in the Nagpore, Southern, and Secunderabad districts. The ratios in the Burma districts were high. With regard to season, it is observed that dysentery was most prevalent in the third quarter of the year, as was the case in the preceding year, the ratio was 16·62 per 1,000, which, however, is very closely followed by that in the second quarter, 16·04. The disease was least prevalent in the first quarter of the year, the ratio being 10·32. Mortality was equal to ·52 per 1,000 in the third quarter, and lowest ·14 in the fourth quarter; the ratios in the first and second quarters were also low.

*Other diseases of the sub-group* comprised two cases of diphtheria, which occurred at Bangalore, one proving fatal; two cases of epidemic diarrhoea, one of which occurred at Myingyan, and proved fatal, the other happened among troops on the march; four cases of mumps and one of influenza. Madras.

*Malarial Fevers.*—The admissions were 3,450 in number, and the deaths 30, giving ratios of 245·1 and 2·13 per 1,000 respectively, and the ratio of constant inefficiency was 7·18 per 1,000. These ratios are very high, but are due to the very great prevalence of malarial fevers in Upper Burma, more than half the admissions and four fifths of the deaths having occurred in that district. Excluding Upper Burma, the admission ratio for malarial fevers was 136·4, and the death rate 49 per 1,000, which differ very little from the corresponding rates in the preceding year; the former showing a decrease of 2·6, and the latter an increase of ·06, while compared with corresponding ratios in the preceding five years there is an increase of 32·6 in the admission rate, and one of ·16 in the death rate. Looking to the prevalence of malarial fevers in the different districts, it is observed that the admission rate in Upper Burma was as much as 960·7, and the death rate 12·93 per 1,000. The Nagpore district gave a very high admission ratio also, 449·7 per 1,000, but only an increase of 70·5 on the previous year's rate, while there was no mortality. The next ratio was 139·3 per 1,000 in the Bangalore district, an increase of 60·0. The lowest admission ratios were 53·6 and 53·8 per 1,000 in the Madras and Southern divisions respectively, the former being higher by 8·8 and the latter lower by 81·6 than the corresponding ratios in the previous year. The admission ratio at the depôts, 239·7 per 1,000, was a good deal lower than in 1887. Out of the total number of admissions, 153 were for remittent fever, 22 for malarial cachexia, and 3,275 for ague, and of these, Upper Burma furnishes 113 cases of remittent fever, 7 of malarial cachexia, and 1,664 of ague. Of the total number of deaths, 26 were due to remittent fever, 3 to ague, and one was recorded under malarial cachexia; the last mentioned and 22 of the deaths from remittent fever, also one from ague, occurred in Upper Burma.

*Septic Diseases.*—Under this head 11 admissions are returned as against 6 in the previous year. They were all cases of erysipelas and were scattered over various stations. No fatal case occurred.

Venereal diseases caused, as usual, a large amount of inefficiency. The admissions for *primary syphilis* were 1,151 in number, equal to 81·8 per 1,000, of these 163 occurred in Upper Burma. Omitting the sickness in that district, the admission rate for primary syphilis was 80·8, and the constantly sick rate 6·42 per 1,000 as compared with 78·2 and 6·55 in the previous year. If to these ratios the sickness from simple venereal ulcers be added, the admission rate for primary venereal sores is found to be 155·7 per 1,000, and the constantly sick rate 11·18, which are below corresponding rates in the previous year by 21·2 and 2·10 respectively; but in comparison with average ratios for the preceding five years an increase of 23·6 is observed in the admission rate, and one of 1·20 in the constantly sick rate.

*Secondary syphilis* caused 511 admissions, including 87 in Upper Burma. Omitting the latter, the ratio of admission was 34·7 per 1,000, which is above the corresponding ratio in the previous year by 2·0, and above the quinquennial average rate by 7·9. The ratio of constantly sick was 4·03 per 1,000, which is an increase of ·14 on the last year's rate, and one of 1·36 on the average rate.

*Gonorrhœa* caused a total of 2,295 admissions, equal to 163·1 per 1,000; of these, 376 occurred in Upper Burma, without which the admission ratio for the rest of the Command was 157·1 per 1,000, and the constantly sick rate 11·20. The former is higher than the corresponding ratio in the preceding year by 16·4 and than the average rate by 17·5, and the latter is also higher in both these comparisons by ·98 and 1·45 respectively.

Taking all forms of venereal disease together, the admission ratio for the whole Command was 359·3 per 1,000, and the constantly sick rate 26·85 per 1,000. The admission ratio, excluding the sickness in Upper Burma, amounted to 347·5, and the ratio of constant inefficiency to 26·41 per 1,000. These



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ratios are lower than the corresponding rates in the previous year by only 2·8 and ·98, but are above the quinquennial average rates by 49·0 and 4·01 per 1,000 respectively.

With regard to comparative prevalence of venereal diseases in different districts, it is observed that primary syphilis, not including simple venereal ulcers, caused the highest admission rate, 93·0 per 1,000, in the Bangalore district; the next being 88·2 in the Secunderabad district, 87·9 in Madras district, and 87·8 in Upper Burma; the lowest admission ratios was 31·1 in the Nagpore district, 36·7 in the Southern district being next above. The admission ratio among troops on the march was high. Secondary syphilis was most prevalent in the Southern district, the ratio being 53·8 per 1,000, and next in Upper Burma, the ratio being 46·9. The lowest ratios of prevalence were in the Madras and Lower Burma districts, 22·5 and 24·8 per 1,000 respectively. The greatest prevalence of gonorrhœa in any district was in Upper Burma, the admission ratio being 202·6 per 1,000, the next being in the Madras district, 179·0 per 1,000; the lowest admission ratio was 114·4 per 1,000 in Lower Burma, the next above being 159·3 in Bangalore. Taking all these forms of venereal disease together, the highest ratio of admission was 337·3 per 1,000 in Upper Burma, the next being 291·8 in the Secunderabad district; the district showing the lowest admission rate, 207·0 per 1,000, was Lower Burma, and that with the next above, 224·9, was Nagpore. The depôts ratio was as usual high, owing to the number of admissions for secondary disease.

With regard to the great prevalence of venereal disease in Upper Burma, where the admission ratio, if simple venereal ulcer be included, amounted to 437·5 per 1000, the Principal Medical Officer of that division points out that much deterioration of the health of the troops has resulted from this cause, and that at all stations, except Salenmyo, the troops have suffered heavily. Throughout the country, prior to its annexation, venereal diseases were greatly prevalent, and the abolition of repressive legislation will ensure their perpetuation, to the detriment of the general health of the people and the efficiency of the troops.

*Parasitic Diseases* caused 67 admissions, or 4·8 per 1,000. In the previous year there were 51 admissions, or 4·3 per 1,000. All the admissions but three were due to *tænia solium*, of these, 10 cases occurred at Malliapooram and 13 at Bhamo. There were two cases of *ascaris lumbricoides*, and one of *echinococcus*.

No cases of *scurvy* occurred, but 217 admissions were returned under the head of *alcoholism*, of these, 10 were cases of delirium tremens; the ratio of admission, 15·4 per 1,000, scarcely differs from that in the preceding year.

*Debility*.—Under this head 529 admissions and 2 deaths are returned, being in the ratios of 37·6 and ·14 respectively. 162 of the admissions and both the deaths occurred in Upper Burma, without these the admission ratio was 30·0 per 1,000, which is higher than that in the previous year by 2·1. The admission rates in the different districts varied from 87·3 per 1,000 in Upper Burma to 9·57 per 1,000 in the Nagpore district.

*Rheumatism*.—The admissions for rheumatism were 366 in number, or 26·0 per 1,000. Leaving out Upper Burma, where 38 cases occurred, the admission rate for the rest of the Command was 26·8 per 1,000, which is slightly higher than the corresponding rate in the previous year. Rheumatism was most prevalent in the Madras district, the admission ratio being 40·7, the Southern and Bangalore districts coming next, each with 29·3 per 1,000; the lowest ratio of prevalence was 12·0 in the Nagpore district, and then 19·4 in the Secunderabad district. Out of the total number of admissions there were only 6 cases of rheumatic fever.

*Tubercular Diseases* caused 41 admissions and 11 deaths, including 4 of invalids, being in the ratios of 2·9 and ·78 per 1,000 respectively. Excluding 5 cases which occurred in Upper Burma, the admissions gave a ratio of 2·9 per 1,000, which is slightly lower than the corresponding rate in the preceding year. The greatest prevalence of tubercular disease in any district was in Lower Burma, the ratio being 3·0, then in Upper Burma 2·7; in the Nagpore district there were no cases, and in the Bangalore and Secunderabad districts ratios of 1·4 and 1·8 respectively.

*Other diseases of this group* caused 176 admissions, 12·51 per 1,000, or *Madras*, excluding 38 cases in Upper Burma, a ratio of 11·3 per 1,000, which is an increase of 2·5 on the previous year. About two thirds of the total number of cases were non-malignant new growths, principally papilloma, and among the remainder were two cases of cancer, one fatal, one of hæmophilia, one of diabetes, and several of anæmia.

**LOCAL DISEASES.**—*Diseases of the Nervous System* caused 172 admissions and 4 deaths, the admission rate being 12·2 per 1,000. 16 of the admissions were in Upper Burma. The ratio for the rest of the Command was 12·7 per 1,000, being slightly above the rate in the previous year but rather below the average rate. Of the admissions, 25 were cases of mental affection, and among the remainder were 77 cases of neuralgia, 17 of some form of paralysis, 15 of epilepsy, and 2 of apoplexy. Of the deaths three were due to meningitis and one to apoplexy. The greatest prevalence of nervous diseases was in the Southern and Bangalore districts, the admission ratios being 18·3 and 17·7 per 1,000 respectively; the lowest ratios were 5·4 per 1,000 in the Madras district and 6·8 in the Secunderabad district.

*Diseases of the Eye.*—The admission ratio for the Command was 12·9 per 1,000, and exclusive of Upper Burma, 12·3. Comparing the latter with the corresponding ratio in the previous year a decrease of 1·3 is observed, and it is also below the average rate. The greatest prevalence of ophthalmic affections was in the Madras district, the ratio being 19·3 per 1,000, the next was in Upper Burma, with a rate of 16·2; the lowest ratio of prevalence was 6·5 in the Secunderabad district, the next above being 9·6 in the Nagpore district. More than half the admissions were due to conjunctivitis, the remainder being for various causes.

*Diseases of other Organs of Special Senses* caused 201 admissions, or 14·3 per 1,000. Without Upper Burma, in which there were only very few admissions, the ratio amounts to 15·3 per 1,000, which is above the corresponding rate in the previous year and above the average rate. Of the total number of admissions, all, except 9 cases of nasal affection, were for aural diseases, principally inflammation of the external meatus.

*Diseases of the Circulatory System.*—127 admissions and 5 deaths are recorded, including one of an invalid. The admission ratio for the Command was 9·0 per 1,000, that excluding Upper Burma being almost identical, 9·1, which is below the last year's rate by 1·0 and below the average rate. Of the different administrative districts that of Lower Burma gave the highest ratio of prevalence, 18·2 per 1,000, the next below being 12·2 in the Southern district; the lowest ratio of admission was 3·2 in Upper Burma, the next above being 3·6 in the Nagpore district. Nearly two thirds of the admissions were due to palpitation, and among the remainder were 28 cases of valvular disease of the heart and 14 of varix. The deaths were due to valvular disease of the heart 4 cases, and thrombus one case.

*Diseases of the Respiratory System.*—There were 319 admissions, equal to a ratio of 22·7 per 1,000, and 10 deaths, one being that of an invalid. Without the addition of the sickness in Upper Burma, 29 admissions and 4 deaths, the ratio of admission was 23·7 per 1,000, which is below the corresponding rate in the previous year by 3·9 and below the average rate; the death ratio, 41, is also lower than that in the previous year and than the average rate. As in the previous year the greatest prevalence of respiratory diseases was in the Southern district, the ratio being 41·6 per 1,000, while the next ratio of prevalence was 29·8 in the Bangalore division; the lowest admission ratio was only 4·8 per 1,000 in the Nagpore circle, the ratio next above being 15·5 in the Secunderabad district. Three fourths of the total number of admissions were due to bronchial affections, and among the remainder were 16 for pneumonia and 19 for pleurisy. There were 6 deaths from pneumonia, 2 from bronchitis, and 1 from gangrene of the lung. These occurred in the Command, and an invalid died from pneumonic phthisis.

*Diseases of the Digestive System* caused 2,150 admissions and 36 deaths, including one of an invalid after leaving the Command. The admission and mortality ratios were therefore 152·8 and 2·56 per 1,000 respectively. In Upper

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Burma alone there were 410 cases and 13 deaths, excluding these the admission ratio was 142·4 and the mortality rate 1·80 per 1,000, which are lower than the corresponding ratios in the preceding year by 15·4 and 1·44 respectively, and also below average rates. The highest ratio of prevalence of digestive disorders was 220·9 per 1,000 in Upper Burma, the next being 193·2 in the Southern district, followed by 154·0 in the Bangalore district; the least prevalence was in the Nagpore district, 69·4 per 1,000, the next above being 106·3 in Lower Burma, and 149·9 in the Secunderabad district. Mortality also was highest in Upper Burma, the ratio amounting to 7·01 per 1,000, the next ratio was 3·67 in the Southern district; the lowest death rate was ·72 in the Bangalore division, the next being 1·07 in the Madras district. The ratio of admission of these diseases at the depôts was high, but considerably below that in the previous year; the mortality also shows a considerable decline. The admissions were principally caused by affections of the mouth and throat 358 cases, dyspepsia 386, diarrhœa 598, and hepatic affections 555, including 27 cases of hepatic abscess. The deaths in the Command are returned as abscess of the liver 16 cases, hepatitis 13, diarrhœa 2, and ulceration of fauces, colic, volvulus, and peritonitis one case respectively; the death of the invalid was due to abscess of the liver. In Abstract XXVI. is a table showing the prevalence of diarrhœa and of hepatitis and abscess of the liver in each of the divisions of the Command during the year, and in a table in Abstract XXVII. the prevalence of and mortality from these diseases in each quarter of the year. With regard to diarrhœa, by far the greatest prevalence was in Upper Burma, the ratio amounting to 105·1 per 1,000, the next below being 37·4 in the Madras district, which is, however, considerably below the corresponding rate in the previous year; the ratio for the Nagpore district was the lowest, only 15·6, the next above being 27·3 in the Lower Burma district. Diarrhœa was most prevalent in the second quarter of the year, the ratio being 16·6 per 1,000, and next in the third quarter 11·9; the first and fourth quarters show low ratios of prevalence, 6·3 and 6·2 respectively. Hepatitis and abscess of the liver gave an admission rate of 18·7 and a death rate of 2·06 per 1,000, the corresponding ratios in the previous year having been 27·3 and 3·15 per 1,000. The greatest prevalence of these diseases was, as was also the case in the preceding year, in the Southern district, the admission rate amounted to 37·4 per 1,000; the next ratio was 30·2 in Upper Burma, followed by 25·9 in the Secunderabad district; the lowest ratio of prevalence was 5·6 in Lower Burma, the next above being 7·2 in the Nagpore district, and 14·4 in the Bangalore district. With regard to seasonal prevalence, the highest admission ratio, 5·4 per 1,000, is observed in the third quarter of the year, closely followed by 5·1 in the second quarter; the least prevalence was in the fourth quarter, 3·4, and the rate for the first quarter was 4·7. Mortality did not vary greatly in the different quarters of the year, the death rate in the fourth being ·58, that in the third ·52, in the first ·51, and in the second ·45 per 1,000. The sequence both in prevalence and mortality does not correspond at all with corresponding results observed in the preceding year.

*Diseases of the Lymphatic and Glandular System.*—The admissions numbered 593, and the admission rate was 42·1 per 1,000, but the ratio exclusive of Upper Burma was 39·5, which is fractionally above the corresponding rate in the preceding year, and slightly above the average. The greatest prevalence of these diseases was in the Madras district, the admission ratio being 78·2 per 1,000, the next ratio being 59·3 in Upper Burma; the lowest ratio of prevalence was 23·1 in the Secunderabad district, the next above being 38·2 in the Bangalore district. The great majority of the cases were due to inflammation or suppuration of the inguinal glands, and there were 19 admissions for diseases of the spleen, one of which, a case of abscess, had a fatal result.

*Diseases of the Urinary System* caused 61 admissions, equal to a ratio of 4·3 per 1,000. The ratio for the Command, exclusive of Upper Burma, is the same and is higher by 1·5 than that in the preceding year. Very nearly half the admissions were due to incontinence of urine, and among the rest cystitis was the principal disease.

*Diseases of the Generative System* caused an admission ratio of 101·3 per 1,000. Excluding the admissions in Upper Burma the ratio for the rest of

the Command was 97·4 per 1,000, which is below the corresponding rate in the preceding year by 25·9. Out of a total of 1,426 admissions 1,100 were cases of simple venereal ulcer. Of the remaining 326 admissions 135 were due to orchitis, and 64 to stricture of the urethra. The greatest prevalence of these affections, principally owing to simple venereal ulcer, was in the Nagpore district, and the next in the Madras district; this was also the case in the preceding year, the least prevalence was in the Bangalore and Southern districts. Madras.

*Diseases of the Organs of Locomotion* caused an admission rate of 6·6 per 1,000. Half the admissions were due to synovitis, and among the remainder the most frequent causes were periostitis, ankylosis, and inflamed bursa.

*Diseases of the Connective Tissue.*—300 admissions are recorded, principally cases of abscess. The admission ratio was 21·3 per 1,000.

*Diseases of the Cutaneous System* caused 1,033 admissions, equal to a ratio of 73·4 per 1,000. Excluding 177 cases which occurred in Upper Burma the admission ratio for the rest of the Command was 69·9, which is below the corresponding rate in the previous year by 7·5, and also below the average. In the Madras district by far the highest ratio of prevalence of these affections is observed, being 183·3 per 1,000, the next rate was 95·4 in Upper Burma; the lowest ratio was 42·1 in the Secunderabad district, the next above being 63·7 in Bangalore. Among the numerous causes of admission the principal were ulcers, boils, and eczema.

*Poisons.*—There were 12 admissions and one death. The following were the cases: one of carbolic acid poisoning from accidentally drinking a solution, this proved fatal; three wounds from stinging insects; two from oxalic acid poisoning; two from poisoned wounds from bites of venomous animals; one from dog bite; two on account of poisoning by dead animal matter; and two from poisoning by morbid secretion.

*Injuries.*—The admission ratio for injuries was 119·7 per 1,000, and the death rate 2·34. Excluding the admissions and deaths in Upper Burma the ratios were 123·0 and 2·0 per 1,000 respectively, which do not differ much from the corresponding ratios in the preceding year or from average ratios. General injuries caused 32 admissions and 22 deaths. The admissions comprised 14 of sunstroke, 11 of heat apoplexy, 3 of burns or scalds, 2 of heat stroke, and two of multiple injury. The deaths were caused by heat apoplexy in 9 cases and sunstroke in 3. Seven men were accidentally drowned. There were two cases of death by hanging, one judicial and the other suicidal. There was also one death from multiple injury. Local injuries were 1,649 in number, and there were 9 deaths. Three fourths of the admissions were for contusions, wounds, or sprains, and among the remainder were 77 cases of fracture and 20 of dislocation. The deaths comprised four from gunshot wound, of which two were accidental, a man being accidentally shot by a comrade in one case, and in the other a man while out shooting fell and his gun went off, the charge lodging in his neck; the other two were cases of suicide, both cases of gunshot wound of the head. There were two deaths from fracture of the base of the skull, each resulting from a fall from a horse. There was one death from self-inflicted wound of the throat, one of extensive contusion of the abdomen with injury to the viscera, due to a fall from a height, and one from concussion of the brain, also resulting from a fall. In addition to the above injuries there were 3 admissions and 2 deaths from gunshot wounds received in action.

Among the surgical operations performed during the year were: an amputation of the arm on account of compound comminuted fracture of the humerus, an amputation of the forearm on account of wounds, an amputation at the lower third of the thigh on account of compound comminuted fracture of the femur, and an amputation of the leg on account of gunshot wound, all the foregoing were successful. The operation of trephining was necessary in a case of fracture of skull, but the result was unsuccessful. A case of volvulus required abdominal section, which was performed, but death resulted from shock. Of four operations for liver abscess death resulted in three instances. There were also many other minor operations performed, all of which had a successful result.

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*Invaliding.*—The number of men invalided home during the year was 392, the ratio per 1,000 of strength being 27·85 for the whole Command. There was very little invaliding from Upper Burma, and excluding the statistics from that district the ratio per 1,000 for the rest of Command was 31·02, which is almost identical with the corresponding rate in the previous year, and is only fractionally below the average. The invaliding ratios for the different arms of the service were for the cavalry 20·87, artillery 20·61, and infantry 26·21 per 1,000, this is shown in Abstract XLI. Compared with corresponding results in the preceding year an increase of 2·55 is observed in the ratio for the cavalry, a decrease of 4·72 in that of the artillery, and an increase of 2·00 in that of the infantry. In the cavalry the highest ratio was 22·45 per 1,000 in the 21st Hussars quartered at Bangalore, the ratio in the 7th Hussars at Secunderabad being 19·78. In the artillery, among batteries with an average annual strength of over 100, the highest invaliding ratio was 51·61 per 1,000 in M Battery, B Brigade, stationed at Bangalore, the next ratio being 40·56 in P Battery, 1st Brigade, also at Bangalore, followed by S Battery, 1st Brigade, with 27·77 at Bellary; the lowest invaliding ratio was 6·66 per 1,000, in I Battery, 3rd Brigade, quartered at St. Thomas's Mount, the next above being 6·71 in the U Battery, 1st Brigade, also at St. Thomas's Mount, and 7·52 in G Battery, 2nd Brigade, at Bellary. In the infantry the highest admission rate was 93·02 per 1,000 in the 1st Battalion, Rifle Brigade, quartered for the most part in Upper Burma, the next 48·41 in the 2nd Battalion, South Wales Borderers, in Lower Burma, and then 47·09 in the 2nd Battalion, Somersetshire Light Infantry, at Belgaum after arrival from Upper Burma; the lowest invaliding ratio of any regiment with an annual average strength of over 150 was 1·35 per 1,000 in the 1st Battalion, Duke of Cornwall's Light Infantry, stationed at Bellary, the next 1·71 in the 2nd Battalion, Cheshire Regiment, in Burma, and 3·88 in the 2nd Battalion, Royal Munster Fusiliers, also in Burma. The tables given on a previous page show the influence of age and service in India on invaliding. It will be observed that there was but little invaliding among men under 20 years of age, but among men between 20 and 25 years of age the ratio was 28·59 per 1,000; in the next quinquennium the rate falls very slightly, to increase again in the succeeding one, after which there is another decline up to 40 years of age; in the preceding year there was a steady but gradual increase of invaliding in the succeeding quinquennia until the ratio at this age was reached. With regard to the effect of residence in the country on invaliding, the ratio of men invalided home in their first year of service was 17·50 per 1,000, rather below the corresponding rate in the previous year; there was a considerable increase in the invaliding of men in their second year of service in the country, the ratio being 29·69. Among men in their third and fourth years of service there was a further increase, but there was a decline among men in their fifth year. These results do not correspond with those shown in the return of the previous year. The principal causes of invaliding were dysentery 42 cases, or 2·08 per 1,000, which is lower than in the previous year; secondary syphilis 41 cases, or 2·91 per 1,000, an increase on the last return; debility 52 cases, or 3·70 per 1,000; rheumatism 12 cases or ·85 per 1,000; tubercular disease 14 cases or ·99 per 1,000, all being cases of lung affection; these ratios are lower than those in the previous year; nervous diseases 41 cases, or 2·91 per 1,000; of these 22, or 1·56 per 1,000, were mental affections; both of these ratios show an increase; diseases of the circulatory system 34 cases, or 2·42 per 1,000; diseases of the respiratory system 16 cases, or 1·14 per 1,000; diseases of the digestive system 42 cases, or 2·98 per 1,000, and injuries 20 cases or 1·42 per 1,000, all of which are lower than the corresponding rates in the preceding year. The number of men finally discharged the service as medically unfit was 187, equal to a ratio of 13·28 per 1,000, which is rather below the average rate, but about the same as the ratio recorded in the preceding year. The principal disabilities causing discharge by invaliding were secondary syphilis 25 cases, or at the rate of 1·77 per 1,000; debility 22 cases, or 1·56 per 1,000, which are higher than corresponding ratios in the preceding year; tubercular diseases 8 cases, or ·57 per 1,000, a decline from the last year's rate (8 of the cases were tubercle of the lung); diseases of the nervous system 28 cases, or 1·99 per 1,000, rather in excess of the last year's rate (22 of the cases, or 1·56

per 1,000, were mental disease); diseases of the circulatory system 19 cases, *Madras*, or 1·35 per 1,000; diseases of the respiratory system 6 cases (including 1 of pneumonic phthisis), or ·43 per 1,000; diseases of the digestive system 15 cases, or 1·07 per 1,000; all these were below the corresponding ratios in the previous year; and injuries 18 cases, or at the rate of 1·28 per 1,000, which is in excess of the rate in the last return, and is owing in great measure to 7 men having been discharged on account of injuries received in action.

**Officers.**—The average strength during the year was 365, and there were 330 attacks of illness, 6 deaths, and 40 officers were invalided to England. The ratio of prevalence of sickness, therefore, was 904·1, that of mortality 16·44, and that of invaliding 109·39 per 1,000. In the previous year the respective ratios were 833·8, 10·16, and 58·30 per 1,000. Eruptive fevers were represented by one case of small-pox and one of measles. Simple continued fever was the cause of 46 attacks of illness, and there were 3 cases of enteric fever, one of which, at Bellary, was fatal. There was also one case of cholera, fatal, at Mandalay. Fifteen attacks of dysentery are recorded, but no death. Malarial fever caused 56 illnesses, 9 of them being cases of remittent fever. Disorders of the digestive system caused 43 attacks of illness, 19 being cases of diarrhoea and 11 of hepatic affections, including 2 fatal cases of hepatitis. In no other order of local diseases was there any great amount of sickness; but injuries were rather frequent, being 54 in number, chiefly contusions, wounds, and sprains; there were also 7 cases of fracture, and 2 of dislocation. The two remaining deaths were, one from snake bite and one from gunshot wound received in action, both of these took place in Upper Burma. The causes necessitating invaliding to England were continued fevers 8 cases, including 4 enteric, malarial fevers 6, debility 5, diseases of the digestive system 6, including 3 of hepatitis, injuries 3, venereal affections 2, respiratory diseases 2, diseases of the urinary system 2, and dysentery, tubercular disease of the lung, mania, iritis, deafness, and abscess one case respectively.

**Women.**—The average strength of women was 843, and there were 816 admissions into hospital and 11 deaths. The admission ratio, therefore, was 968·0, and the death rate 13·05 per 1,000. These are lower than the corresponding ratios in the preceding year by 34·3 and 4·47 per 1,000 respectively. Among eruptive fevers were 3 cases of small-pox and 6 of measles. Continued fevers caused 36 admissions, 3 being cases of enteric fever, all of which did well. There were 26 cases of dysentery recorded, but no death. Malarial fevers caused 104 admissions, 3 being cases of remittent fever, one of which proved fatal. There was one case of hydrophobia, this occurred at St. Thomas's Mount and terminated fatally. Debility caused as many as 244 admissions. There were 12 admissions for rheumatism, one being a case of rheumatic fever; there were 11 cases and 3 deaths from tubercular disease of the lungs, and there was a fatal case of cancer; 19 admissions are shown for nervous affections, principally neuralgia, and there was one death from puerperal convulsions. Ophthalmic affections caused 22 admissions, chiefly for conjunctivitis. Diseases of the circulatory system caused only 4 admissions, of which two were cases of phlegmasia dolens. Respiratory diseases show 40 admissions, nearly all for bronchitis, from which one death occurred; there were also one case of pleurisy and one of pneumonia. There were 163 admissions for diseases of the digestive system, the principal illnesses were affections of the mouth and throat 39 cases, dyspepsia 53 cases, diarrhoea 31 with one death, and hepatic diseases 20 cases, with one death from hepatitis. Diseases of the generative system caused 75 admissions for various causes, among which were 22 cases of abortion, one being fatal. There was not much sickness under the remaining orders of local diseases, and injuries caused but very few admissions.

**Children.**—The average strength is shown as 1,627, and there were 1,437 admissions into hospital and 70 deaths, being in the ratios of 883·2 and 43·02 per 1,000 respectively. Compared with the corresponding ratios for the preceding year there is an increase of 27·6 in the admission rate, and a decrease of 11·07 in the death rate. Eruptive fevers caused 65 admissions, 4 being cases of small-pox, 2 of chicken-pox, and 59 of measles, from which 2 deaths occurred. Whooping cough was the cause of 26 admissions, and 3 cases died. Continued fevers show 127 admis-

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sion, 5 of these, one being fatal, were cases of enteric fever. Dysentery caused 36 admissions and 4 deaths; there was a fatal case of epidemic diarrhoea, and one case of diphtheria, which recovered. Under malarial fevers 150 admissions are recorded, 12 being cases of remittent fever with 3 deaths, one case of malarial cachexia, fatal, and the rest acute. One case of erysipelas is returned, and one of hydrophobia, both were fatal. 26 admissions are shown for parasitic diseases, principally ascariides. Under developmental diseases 4 cases and 3 deaths from immaturity at birth, also one fatal case of spina bifida, and 121 of debility with 7 deaths are returned. Among local diseases nervous affections caused 16 admissions, including 11 cases of convulsions and 7 deaths, 2 of meningitis, fatal, and one of chronic hydrocephalus, also fatal. Ophthalmic affections gave 129 admissions, all but 2 being for conjunctivitis, mostly of a simple character. Diseases of the circulatory system are represented by a single fatal case, returned as cyanosis. Respiratory diseases caused 285 admissions, all but 13 being for bronchitis, 4 cases of which proved fatal; among the remaining cases were 6 of croup, 3 fatal; 2 of pneumonia, one fatal; and 2 of pleurisy, one fatal. Diseases of the digestive system caused 330 admissions, of which 166 with 9 deaths were due to diarrhoea, 99 with 12 deaths to teething, and 23 to sore throat; there were only 6 admissions for hepatic affections, but there was one death from enteritis. Diseases of the cutaneous system show 52 admissions, 22 of them being due to eczema, and 17 to boils. In the remaining orders of local diseases but very little sickness is recorded. Under the head of injuries 32 admissions are shown, the principal causes being wounds, contusions, and sprains; there were also three cases of fracture, and three of burns and scalds.

**SANITARY CONDITIONS.**—The Principal Medical Officer in his report on the sanitary state of the Command remarks as follows on the different administrative districts.

*Madras District.*—The general health of the troops in this district was good. Fort Saint George, in which the barracks for British troops stationed in Madras are situated, is overcrowded, but the barracks themselves have not been so. The sanitation of the barracks is well cared for, but it is stated that the infantry barracks are so placed that they cannot be perfectly ventilated. It is also stated that the ground floor in these barracks should not be occupied for any length of time. As before reported, the station hospital is badly situated on account of its proximity to the main road and a river which is somewhat polluted, but a committee has recently assembled to report on a site for a new hospital at Cupid's Bow. At Poonamallee the barracks consists of four blocks in two parallel ranges. Various improvements have been effected in them from time to time, the latest being removal of walls enclosing the verandahs and preventing free perfilation of air. The drainage of Poonamallee is fairly good except at the outskirts, where it is indifferent or completely wanting. There is considerable difficulty in draining the place owing to the position, and to make it effectual large expenditure would be incurred. At St. Thomas's Mount the north and south barracks are too near the hill and their construction is faulty, but the new barracks to the south-west of the hill are favourably reported on. Several new drains were made in order more effectually to carry away surface water, but it is said that a more extended system is still required.

*Bangalore Division, including Belgaum and Ceded Districts.*—The general health of the troops was good, and the sanitary condition of the barracks and the buildings connected therewith was generally satisfactory. At Bangalore the proximity of the native bazar to the Parade and Ulsoor barracks is in many respects objectionable, as it is far from being in a proper sanitary condition. The barracks afford ample and well ventilated accommodation; the inner verandahs of all are occupied as sleeping apartments, giving ample cubic space. It is stated that a further extension of the surface drainage of the infantry and cavalry barrack grounds on a scale similar to that which has been carried out in the artillery lines is very necessary. The nullah in rear of the pensioners' lines, and adjacent to the horse artillery lines, is in an insanitary condition. It is recommended that it should be filled up, and a proper drain constructed for about half-a-mile from the lines. The open

nullah between the pensioners' lines and the south station hospital requires more perfect supervision. It is remarked that the drinking water supply has for years past been the subject of almost continuous consideration, and everything is being done by way of filtration and boiling to render it as fairly potable as possible. It is, however, very important that the distribution of the drinking water should be effected by casks with openings at the top sufficiently large for cleansing, or by zinc buckets in place of packals and mussaks. The proposal that the drinking water should be obtained from sources outside the cantonment has been approved, and estimates are now being prepared having that object in view. With regard to the station hospital, it is stated that considerable inconvenience arises from the want of accommodation for the Army Hospital Native Corps in or near the hospital enclosures. It is also stated that extended surface drainage is required for the grounds of both hospitals. At Belgaum also there is a marked deficiency of surface drainage all over the cantonment. The large natural drain or nullah situated between the infantry barracks and the hospital, into which a considerable portion of the surface drainage runs, requires to be cleansed and deepened. All barrack rooms, canteens, lavatories, &c. are said to be much in need of additional ventilation. The surface drainage round these buildings is very imperfect. Improvements are also required in the latrines as to ventilation, and it is very desirable that the floors, which are of clay, should be concreted or covered with some other impermeable material. The verandah floors of certain wards in the station hospital are also of clay, and these should be concreted. At Bellary it is said that the composition of the ground is a black cotton soil, which rests on a thick layer of disintegrating primary rock, and in presence of great sun heat it favours to an exceptional degree the development and evolution of malarial poisons. At this station as at others the surface drainage should be carried out in well laid, properly pointed, channels. This and the planting of fast growing trees and shrubs would largely assist in diminishing malarial disease. The water supply of the cantonment requires attention, and a committee was ordered to assemble for the purpose of submitting some definite proposal for its improvement.

*Southern District.*—The health of the troops at Wellington and Calicut was good, at Cannanore indifferent, and at Malliapooram indifferent during the second quarter of the year. The sanitation of the barrack buildings and hospitals was satisfactory with few exceptions. At Wellington a ward in the hospital for insanes is said to be needed. Accommodation for the Army Hospital Native Corps close to their work is required. At Cannanore the lighting of the barracks is reported to be defective. The distribution of the water supply at Wellington by means of leather buckets and packals is objectionable, and zinc buckets should be substituted for them. The water up to the point of distribution is pure and wholesome. The sanitary condition of the Coonoor hazar is very fair, but it is pointed out that it can never be all that is desirable till the water supply is piped, and a system of drainage carried out. This bazar being greatly frequented by the young soldier it is of importance that its sanitary condition should be as good as it is possible to make it. The drainage of Wellington is favoured by the conformation of the ground, but it would be advisable that the present masonry drains should be extended so that their contents could be carried still further away from the barracks.

*Secunderabad District.*—The health of the troops was fair, but shows a decided improvement as compared with the previous year. The sanitation of barracks and hospitals was generally satisfactory. At Secunderabad it is said that the great radical defect is the total absence of artificial surface drainage, there being no means of carrying off storm water except by the natural channels, which are formed in due course by the cutting up of the surface into deep rugged drains, rendering the ground broken and uneven. The surface soil is composed to a great extent of disintegrated granite, which is known readily to evolve malarious poison under the influence of heat and moisture. A thorough system of surface drainage is, therefore, strongly recommended. The low swampy ground between the two infantry barracks, to which much of the malarial fever has been attributed, also requires draining.

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With a view of minimising the noxious effect of the wind blowing over this malarial swamp towards the barracks it has been recommended that belts of fast growing trees should be planted, and indeed the planting of trees over the whole cantonment would add immensely to the comfort and appearance of the station, which is at present singularly bare, and from the perpetual glare very distressing to the eyes. It is stated that the infantry barracks in South Trimulgherry occupy an extended area on an elevated and sloping piece of ground faultlessly situated were it not so much exposed to the south-west monsoon, and it is important to protect the men from its influence. Some improvement to the roofs of these barracks was necessary, and representation was made. The accommodation was generally sufficient with the exception of the cavalry barracks, where, owing to the strength of the regiment, it was found necessary to utilise as dormitories the rooms of the lower stories, recreation rooms, and also huts; these arrangements were found indispensable pending the erection of the new barracks in progress. Certain defects were pointed out in the cook-houses, which however admit of easy improvement, and which when effected will materially assist in the better cooking of food. Of the three station hospitals it is stated that the south, though very imposing in appearance, lacks in many respects the requirements of a good hospital; the wards run across the building and are draughty and noisy; they are, however, well provided with screens, and are on the whole very comfortable. The full accommodation is 200 beds, which is not more than sufficient for the requirements of two infantry regiments of full strength as well as the departments. A detached building formerly a hospital sergeants' quarter has been appropriated for an officers' hospital, a most necessary and useful institution. The central and north hospitals have sufficient accommodation and are exceedingly clean and comfortable. The hospital for women and children occupies some married quarters, but although a good many alterations and improvements have been effected with a view of making it more comfortable and suitable, still it is not, and never could be made, a good hospital. When it is considered that provision has to be made for general diseases as well as lying-in cases, no building, short of one specially constructed for the purpose, is even likely to be satisfactory.

*Nagpore District.*—This district only belonged to the Command for the first three quarters of the year, being then transferred to Bombay. The general health of the troops during that time was fairly good. At Nagpore the old barracks were occupied by the artillery and the new barracks by the infantry. There was no overcrowding, and sanitation was satisfactorily maintained. There are plenty of trees between the barrack blocks affording necessary shade. The construction of the garrison prison has been rapidly pushed on. The hospital and subsidiary buildings were kept in good sanitary condition. At Kamptee several improvements were carried out, such as re-roofing certain houses, passages, latrines, &c. with Allahabad tiles, repairing and improving drains, additions to the canteens, &c.

*Lower Burma District.*—The health of the troops during the year is reported to have been fair. At Rangoon the infantry barracks are well raised above the ground, airy, cheerful, and well adapted to the climate, being equally well protected from sun and rain. The barracks occupied by the artillery are of older construction and the site is not so good, but there has been ample accommodation. The hospital is suited to requirements, and its sanitation satisfactory. The drainage has not been found defective, open masonry drains pass round each barrack block communicating with iron pipes running down the hill on which the barracks are situated. Water supply has been occasionally limited, it is recommended that the same system which supplies the town should be extended to cantonments and barracks. At Toungoo it is complained that no quarters near the hospital are provided for the Army Hospital Native Corps.

*Myingyan and Mandalay District or Upper Burma.*—The general health of the troops was indifferent, but it is stated that at Mandalay there is considerable improvement as compared with the previous year. The Mandalay district consists of a low flat tract of country lying between the Irrawaddy and the Shan hills, the plain is in many places below the level of the river, the water of which is kept out by an enormous bund. The cantonments at Mandalay

occupy the site of the old enclosed city, and are about two and a half miles from the river and to the north-east of the native town. The only elevated portion of ground in the vicinity is Mandalay hill to the north-east of the town, and within 500 yards of cantonments. This hill consists of gravel rock with a soil of alluvial clay. The European infantry barracks are placed at the north-east corner of the cantonment, they are built of teak wood, and are raised about 10 feet from the ground; a verandah 12 feet wide runs round each block, the floors are of pounded clay, sand, and gravel. The barrack buildings are arranged in parallel rows on open ground, and have double roofs with ridge ventilation; the artillery barracks are outside the palace enclosure. The hospital consists of three wooden structures arranged *en echelon*, they are raised 12 feet from the ground, and are connected by covered ways. The ground floors of two of them are of concrete and contain offices, surgery, &c. They contain 125 beds, and the accommodation was sufficient, but there are no suitable quarters for hospital subordinates. The water supply is from the moat from the Nanda lake, which is fed by streams from the Shan hills and by a branch from the Naddya river. The supply was sufficient, but on a recent analysis it was found to contain organic matter. A scheme has been projected for bringing water from its source by means of pipes through filtering beds. Drainage has been natural, but drainage works are in progress. The conservancy of the native town is very unsatisfactory. Bhamo is situated on the left bank of the Irrawaddy at an elevation of 640 feet. The troops were accommodated in forts outside the town. There was some overcrowding at times, but the erection of a new building has obviated this. It is recommended that the basement flooring of the barracks be laid with concrete as the fine dust from the existing flooring permeated everything. The hospital was an ordinary full company barrack of corrugated iron, it was insufficient for requirements during the unhealthy season, and an unoccupied barrack was also utilized. Water was obtained from wells which were protected from all possible contamination, the supply was good; there is a marsh outside the stockade which is thought to be the main cause of the prevalence of malarial fevers, and efforts are being made to drain it. At Shwebo the barrack buildings were constantly in need of repair, but sanitation was generally well attended to. A Buddhist monastery and a wooden shed with a double roof have been used for the accommodation of the sick. Bernardmyo is situated on the slope of a valley surrounded by hills covered with jungle. The troops were accommodated in four wooden barracks with thatched roofs, the floors are raised from the ground, and a space exists between the walls and roof which allows of ventilation. The hospital is a similar building. The water supply is abundant and of good quality, sparkling and pleasant. Salenmyo is situated in the valley of the Irrawaddy, about nine miles from the river. The surrounding country is flat and under wet cultivation the greater part of the year. The barracks are all of a temporary character, built of mats with thatched roofs. The hospital is of the same character. At Myingyan the barracks are built of teak wood and have double roofs with ridge ventilation and broad verandahs, and are well raised from the ground, one of them is used for a hospital. Water supply was abundant and quality good. Food supplies fairly plentiful, and meat was of good quality. Drainage chiefly natural, but cuttings were made whenever it was necessary to carry off storm water. At Meiktila the quarters occupied by the troops consisted of buildings of bamboo with mat walls, thatched roofs, and wooden floors, and are situated on the banks of a lake 15 miles in circumference, no marshy land in the vicinity. The barracks are all of a temporary nature. The water supply was from properly protected wells, supply inexhaustible and quality good. At Mambu the troops occupied only temporary huts, and the place was subsequently evacuated. Koni also was temporarily occupied, it is situated in the Southern Shan States at an elevation of over 4,000 feet. The quarters consisted of mud huts plastered over with thatched roofs. Drinking water was only obtainable from streams, and in the rainy season was impregnated with organic matter. During the rains, in spite of wood fires, it was difficult to keep the huts at a proper temperature.

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## III.—BOMBAY.

*Bombay.*

The average strength of warrant officers, non-commissioned officers, and men during the year was 11,925, being greater than the strength in the preceding year by 642. The most important of the statistics of sickness and mortality are shown in the following table:—

| 1888.<br>Average<br>Strength. | Admissions. | Deaths          |              |        | Invalids   |                     | Average daily Sick. | Ratios per 1,000 of Strength. |         |                     |                              |                  |
|-------------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|-------------------------------|---------|---------------------|------------------------------|------------------|
|                               |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally discharged. |                     | Admissions.                   | Deaths. | Invalids sent Home. | Invalids finally discharged. | Constantly Sick. |
| 11,925                        | 16,354      | 139             | 7            | 146    | 296        | 165                 | 816·14              | 1371·4                        | 12·24   | 24·82               | 15·84                        | 68·43            |

Compared with the return for the preceding year an increase of 97·5 per 1,000 has occurred in the ratio of admission, and one of 2·13 in that of constantly sick, but the mortality rate has declined by 2·21, while in comparison with corresponding average ratios for the preceding ten years a decrease is observed, amounting to 214·7 per 1,000 in admission rate, and 501 in death rate, but an increase of 2·12 in the rate of constant inefficiency through sickness.

The average sick time to each soldier was 25·05 days, being longer than the corresponding period in the previous year, and than the decennial average period by rather more than four-fifths of a day. The average duration of each case of sickness was 18·26 days, which is less than in the preceding year by about three-quarters of a day, but longer than the average period for the previous ten years by nearly three days.

The loss to the Command by death and invaliding was 435, and the total loss to the service by death and final discharge from the army as medically unfit was 311, which is equal to a rate of 26·08 per 1,000, fractionally below the corresponding rate in the previous year.

The prevalence of sickness and mortality in the different circles of administration is shown in Abstract XXIX., which contains a table furnished by the Principal Medical Officer, Surgeon-General W. M. Webb. In the Bombay district the admission ratio was 1293·2, and the mortality rate 11·67 per 1,000, which are higher than the corresponding ratios in the previous year by 54·3 and 1·92 per 1,000 respectively. The increase was general at all stations, except Deesa and Aden. In the Sind district the admission and death rates, 1748·6 and 8·83 per 1,000, also show an increase, the former by as much as 495·3, but the latter only fractionally. Fevers were the chief cause of increase. In the Poona circle the admission ratio was equal to 1323·0, and the death rate to 11·22 per 1,000, both show an increase, the former one of 210·4, and the latter one of 1·65. Cholera was prevalent in the district, and enteric fever was severe. The Mhow district gave a ratio of 1372·5 for admission, and one of 15·80 per 1,000 for mortality, which are lower than the corresponding rates in the previous year by 122·4 and 7·75 per 1,000 respectively; malarial fevers were generally less prevalent in the district. The Nagpore circle was only transferred to the Bombay command at the commencement of October, but the annual admission ratio was equal to 1358·4 per 1,000, and the annual mortality rate to 3·58. The Sanitaria gave an admission ratio of 1653·7 per 1,000, a decline of 842·4 from the previous year. No mortality occurred at these stations.

With regard to individual stations, the Principal Medical Officer shows in a table in Abstract XXX. the admissions and deaths with the ratios per 1,000 of strength.

The highest admission rate was 2048·9 per 1,000, it occurred at Satara, and was due principally to the prevalence of fevers of a malarial character and venereal

affections. The ratio was higher than that of the previous year by 428·0, and than the average rate for the preceding ten years by 356·7. Ahmedabad gave the next highest ratio, 2000·0 per 1,000, which is somewhat lower than the rate in the previous year, and slightly above the decennial average rate. The chief causes of admission were fevers, chiefly of the simple continued type, enteric fever was also very prevalent. Ahmednagar also gave a high ratio, 1939·6 per 1,000, due chiefly to venereal disease and malarial fevers. The ratio is increased by as much as 776·2 per 1,000 over the rate in the previous year, and by 226·7 over the average rate. The lowest admission ratio at any station, having an average annual strength of over 100 men, was at Deesa, and was 974·0 per 1,000, which is very little more than half the rate in the previous year, and is below the decennial average rate by 490·4 per 1,000. This improvement in health was due to the comparative immunity from climatic disease generally. The admission ratio at Deolali, 976·1 per 1,000, though below the average rate by 369·1, was in excess of the rate in the previous year by 200·8. The ratio next above was 1080·3 per 1,000 at Poona, which, though rather above the previous year's rate, is below the average by 391·9. The most frequent causes of admissions were venereal affections and malarial and continued fevers.

The highest mortality ratio in any station was 33·46 per 1,000 at Ahmedabad, as compared with 8·97 in the preceding year, and a decennial average rate of 17·41; the increase of mortality was due to enteric fever. At Nasirabad the mortality rate was 27·15 per 1,000, which is double the rate in the previous year, and above the average rate by 5·89; in this instance the increase was due also to enteric fever and to heat apoplexy. At Neemuch the death rate was 22·68 per 1,000, somewhat above the average, but considerably below the previous year's rate, which was swelled by an outbreak of cholera. At several stations there was no mortality, and there was a low death rate, 6·22 per 1,000, at Colaba, being lower than the rate in the preceding year by 3·10, and than the average rate by 9·57. At Hyderabad the mortality rate was 6·49, below the average rate by 4·29, but higher than in the previous year by 2·22; and at Mhow the rate was 6·84, which shows a decline in both these comparisons, by 4·25 and 8·72 respectively.

In Abstract XLII. there is a table, taken from the report of the Principal Medical Officer, which gives the more important statistics of sickness and mortality in the different arms of the service, and also in the several regiments, batteries, or corps which served in the Command during the year. In the cavalry, average annual strength 433, the ratio of admission was 1120·1 per 1,000, and was higher than in the previous year by 76·2, the mortality rate was 11·55, a decline of 5·34, and the constantly sick rate 57·27, a decline of 8·44. The average sick time to each soldier was 20·96 days, and the average duration of each case of sickness 18·71 days, the former being shorter by three days, and the latter by over four days than the corresponding period in the previous year. The 6th Dragoon Guards, quartered at Mhow for over nine months, had the highest annual admission rate, 1235·6 per 1,000, and the 5th Lancers, at the same station for two and a half months, on arrival from England, had the lowest rate, 419·3. In the latter regiment there was no mortality, but in the former there were 4 deaths, giving an annual rate of 11·49. The average annual strength of the artillery was 2,711, and the admission ratio was 1527·8 per 1,000, and the constantly sick rate 79·38, which are above the corresponding ratios in the preceding year by 102·4 and 4·73, while the mortality rate, 12·17, shows a decline of 1·38. The average sick time to each soldier was 29·05 days, an increase on the corresponding period of the previous year by 1·70 days, and the average duration of each case of sickness was 19·01 days, which shows scarcely any change. Omitting batteries whose average annual strength was under 100 men, the highest admission rate was 2416·9 per 1,000 in E Battery, 1st Brigade, quartered at Ahmedagar, this was followed by No. 4 Battery, 1st Brigade, South Irish Division, with 2330·6, stationed at Karachi, and then by E Battery, 2nd Brigade, with 2209·5, quartered at Ahmedabad for nine months; the lowest admission ratio was 951·2 per 1,000 in No. 4 Battery, 1st Brigade, Welsh Division, at Mhow nearly the whole year, the next above being 1006·5 in I Battery, B Brigade, stationed at Kirkee, and then 1188·7 in the 1st Battery, 1st Brigade, Western Division, quartered at

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Bombay. The highest mortality ratio was 52·63 per 1,000 in R Battery, 4th Brigade, stationed at Nasirabad; there were 7 deaths, chiefly due to enteric fever or dysentery; this ratio was followed by 33·78, dependent on 5 deaths in O Battery, 2nd Brigade, at Neemuch, and next, 27·78, in E Battery, 1st Brigade. In several batteries there was no mortality, and among those with low ratios were G Battery, B Brigade, at Mhow, 6·33 per 1,000; T Battery, 1st Brigade, at Karachi, 6·37; and I Battery, B Brigade, 6·49. The highest ratio of constantly sick was 124·66 per 1,000 in E Battery, 1st Brigade, the next was 119·81 in E Battery, 2nd Brigade, and the third, 117·07, in G Battery, 3rd Brigade, at Kirkee and Neemuch; the lowest rates of constant inefficiency were 49·85 in R Battery, 4th Brigade, the next being 52·84 in G Battery, B Brigade, and then 55·93 in No. 4 Battery, 1st Brigade, Welsh Division. In the infantry the annual ratio of admission during the year was equal to 1427·6, and that of constant inefficiency to 70·35 per 1,000, being higher than corresponding ratios in the previous year by 126·3 and 2·70 respectively; the mortality ratio, 11·69, has declined by 1·68. The average sick time to each soldier was 25·75 days, and the average duration of each case of sickness 18·03 days, the former being longer and the latter shorter than the corresponding period in the previous year by about a day respectively. Taking individual corps the highest annual admission rate was 2072·3 per 1,000 in the 2nd Battalion, Royal Lancaster Regiment, stationed at Karachi for over nine months on arrival from Quetta, the next ratio was 1775·3 in the 1st Battalion, Loyal North Lancashire Regiment stationed at Mhow, followed by an annual rate of 1397·9 in the 1st Battalion, West Riding Regiment, at Aden for a short time after arrival from Mean Meer; the lowest annual admission rate was 774·2 per 1,000 in the 2nd Battalion, North Staffordshire Regiment, also a short term at Aden; the next ratio was 820·4 in the 2nd Battalion, Yorkshire Light Infantry, at Karachi, followed by 893·1 in the 1st Battalion Royal Fusiliers, at Poona. The highest ratio of mortality was 18·33 per 1,000 in the 2nd Battalion, Royal Dublin Fusiliers, quartered at Nasirabad, the next, 14·05, in the 2nd Battalion, Durham Light Infantry, at Poona, and then 13·65 in the 1st Battalion, Royal Fusiliers; the lowest annual death rate was 4·33 per 1,000 in the 2nd Battalion, Middlesex Regiment, quartered at Kamptee, followed by 5·82 in the 1st Battalion, Loyal North Lancashire Regiment, and the next, 5·99, in the 2nd Battalion East Yorkshire Regiment, at Bombay and afterwards at Aden. The greatest amount of constant inefficiency was in the 1st Battalion, Loyal North Lancashire Regiment, 82·37 per 1,000, followed by 79·40 per 1,000 in the 2nd Battalion Lancashire Fusiliers, stationed at Ahmednagar and subsequently at Nasirabad, and 75·18 in the 2nd Battalion, Royal Lancaster Regiment; the lowest annual ratio was 38·06 per 1,000 in the 2nd Battalion, North Staffordshire Regiment, the next being 45·89 in the 2nd Battalion, East Yorkshire Regiment, and then 52·91 in the 2nd Battalion, Yorkshire Light Infantry.

The following table has been prepared to show the influence of age on the sickness, mortality, and invaliding among the troops in the Command during the year:—

| Ages.                  | Average Strength. | Admissions. | Deaths. | Invaliding. | Ratios per 1,000 of Strength. |         |             |
|------------------------|-------------------|-------------|---------|-------------|-------------------------------|---------|-------------|
|                        |                   |             |         |             | Admissions.                   | Deaths. | Invaliding. |
| Under 20 years -       | 252               | 337         | 4       | 5           | 1337·3                        | 15·87   | 19·84       |
| From 20 to 24 years -  | 5,540             | 8,931       | 66      | 146         | 1609·5                        | 11·89   | 26·31       |
| " 25 " 29 " -          | 3,671             | 5,436       | 35      | 100         | 1480·8                        | 9·53    | 27·24       |
| " 30 " 34 " -          | 1,020             | 1,193       | 23      | 29          | 1169·6                        | 21·57   | 28·43       |
| " 35 " 39 " -          | 429               | 334         | 9       | 13          | 778·5                         | 20·98   | 30·30       |
| 40 years and upwards - | 114               | 64          | 2       | 3           | 561·4                         | 17·54   | 26·32       |
| Not stated -           | 890               | 59          | 1       | —           | —                             | —       | —           |
| Total -                | 11,925            | 16,354      | 129     | 296         | 1371·4                        | 11·66   | 24·83       |

The highest ratio of admission, 1609·5 per 1,000, was, as in the preceding *Bombay* year, among men between 20 and 25 years of age; the next was among men between 25 and 30 years, and the ratio further declined during the succeeding quinquennia. The admission ratio of men under 20 years of age was higher than the corresponding rate in the previous year, as were also the ratios of men between 20 and 25, and 25 and 30 years of age; but the remaining ratios were lower. Mortality was highest among men between 30 and 35 years of age, the rate in the next quinquennium being only just below. The lowest mortality ratio was among men between 25 and 30 years of age. In the previous year mortality was highest between 35 and 40 years, but comparatively low between 30 and 35 years, and the lowest was over 40 years. The mortality rate among men under 20 years of age in the year under report is a good deal in excess of that in the preceding year.

In the succeeding table the sickness, mortality, and invaliding among the troops in the Command during the year is given, as far as possible, according to the length of service in the country.

| Years of Service<br>in the Country. | Average<br>Strength. | Admis-<br>sions. | Deaths. | Inva-<br>liding. | Ratios per 1,000 of Strength. |         |                  |
|-------------------------------------|----------------------|------------------|---------|------------------|-------------------------------|---------|------------------|
|                                     |                      |                  |         |                  | Admis-<br>sions.              | Deaths. | Inva-<br>liding. |
| Under 1 year - -                    | 2,206                | 3,072            | 34      | 49               | 1392·6                        | 15·41   | 22·21            |
| From 1 to 2 years -                 | 1,835                | 2,941            | 22      | 68               | 1602·7                        | 11·99   | 37·06            |
| " 2 „ 3 „ -                         | 2,278                | 3,705            | 32      | 74               | 1626·4                        | 14·05   | 32·48            |
| " 3 „ 4 „ -                         | 1,147                | 1,837            | 10      | 23               | 1601·6                        | 8·72    | 21·80            |
| " 4 „ 5 „ -                         | 1,247                | 1,863            | 7       | 20               | 1494·0                        | 5·61    | 16·04            |
| " 5 „ 10 „ -                        | 2,023                | 2,872            | 18      | 41               | 1271·4                        | 8·90    | 20·27            |
| " 10 years and upwards              | 297                  | 291              | 15      | 19               | 1014·0                        | 52·26   | 66·20            |
| Not stated - -                      | 902                  | 73               | 1       | —                | —                             | —       | —                |
| Total - -                           | 11,925               | 16,384           | 189     | 206              | 1371·4                        | 11·65   | 24·89            |

The highest admission ratio in the above table is found to be among men in their third year of service in the country, but the ratios among men in their second and fourth years' service in the country differ but very little, and the ratios, after the fourth year, gradually decline. This was the case also in the previous year, but the ratios of admission among men in their second, third, and fourth years of service, though differing but little from each other, were all lower than the corresponding ratios in the year under report. In the previous year the highest ratio of admission was among men in their first year of service in the country; but in the present case this ratio shows a decrease, and is lower than those of men in their second to their fifth year of service in the country. Mortality gave the highest ratio in men over ten years' service in the country, due to a comparatively large number of deaths in a small average strength, this was followed by the ratio of men in their first year's service, which in the preceding year was the highest, and then by that of men in their third year, the remaining ratios all showing a further decrease.

The admissions, deaths, and invaliding, &c. in the different groups and orders of diseases are shown in Abstract XXVIII., and the relative prevalence of sickness and mortality from them in each of the administrative districts is given in the tables in Abstract XXIX.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—35 admissions are recorded for *eruptive fevers*, of these 20 were cases of small-pox, one of which was fatal. The admission ratio for this disease was 1·7 per 1,000, above the average rate in the previous five years by 1·3, and considerably above the last year's rate, when only one case occurred. Eight cases and one death occurred at Mhow in the early part of the year, the disease being at the time very prevalent in the bazar and cantonments; six cases occurred at

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Poona, three at Ahmednagar, two at Kirkee, and one at Colaba. The admissions for other eruptive fevers comprised ten cases of chicken-pox, two of measles, and three of epidemic rose rash.

*Enteric Fever* caused 137 admissions and 48 deaths, being in the ratios of 11·5 and 4·02 per 1,000 respectively, which are above the corresponding ratios in the previous year by ·2 and ·65, and above the average similar ratios for the preceding five years by 2·4 and 1·30 respectively. The per-centage of mortality to attack was 35·0 as compared with 29·9 in the foregoing year. In Abstract No. XXXI. is a table, taken from the report of the Principal Medical Officer, showing the stations at which the admissions and deaths from enteric fever took place in each of the four quarters of the year. It will be observed that the disease occurred at thirteen stations, the greatest number in any one station being at Poona. Comparing these stations with one another, and with the incidence of the disease in the previous year, it is pointed out that at Poona, Nasirabad, Ahmedabad, Neemuch, Ahmednagar, and Deolali an increase in the amount of disease has occurred, there being at Poona no less than 30 more cases than in 1887; at Ahmedabad, Neemuch, and Deolali, 18, 8, and 3 respectively. There was a very marked decrease at Mhow, the number falling from 56 to 10, at Karachi from 19 to 9, and Kirkee also shows a decrease. No cases occurred at Deesa and Hyderabad, where the disease did appear in the previous year. The proportion of deaths to admissions is less in Poona, Mhow, Ahmednagar, and Karachi than in previous years; in most of the other stations the ratio is the same or a little greater. The influence of season on the prevalence of enteric fever in the year under report is but little marked. The greatest prevalence of the disease was in the last quarter of the year, when 40 cases occurred; next in the third quarter, 37 cases, followed by the second with 32 cases, and then by the first quarter with 28 cases. Mortality was highest in the second quarter, 17 deaths; next in the third and fourth quarters, 14 deaths each, the remaining three deaths being in the first quarter. Taking particular stations, it is observed that out of 37 cases which occurred at Poona there were 15 deaths. The Principal Medical Officer remarks that the prevalence of the disease was not traced to any particular sanitary defect in the barracks or their surroundings. The disease was prevalent not only amongst the troops, but also among the European residents at the station. Some of the cases were quite typical, but in others there was difficulty in arriving at a correct diagnosis at first, and it is thought that many of the cases returned as simple continued fever were really cases of enteric fever in a mild form. 21 of the cases with 8 deaths occurred in the third quarter of the year, 9 with 4 deaths in the second, 4 and 3 deaths in the last, and 3 in the first quarter. As regards locality, 22 of the cases occurred at Wanowrie and 15 at Ghorpuri. The mortality to attack was high, being over 40 per cent. At Nasirabad there were 28 cases and 9 deaths. Half the cases occurred in the fourth quarter of the year, and a fourth in the first quarter, the remaining fourth being spread over the second and third quarters. It is said that the origin of the cases could not be traced, and there was no insanitary condition of the lines or their surroundings to account for its prevalence. All the men attacked were young soldiers, the eldest being 27 years of age. At Ahmedabad it is stated the disease was unusually severe, occurring in the early part of the year in almost epidemic form. There were in all 18 cases and 6 deaths. The average age of the men attacked was 21½ years, and average service in the country 13½ months. The disease appeared first in February, when two men in different barracks were attacked; from 12th March to 4th April 11 cases occurred, and 5 died. The other cases were in May, October, and November. As there was not sufficient accommodation for an infantry company at the camp it was decided to re-open an old barrack which had not been occupied for many years; but very shortly after the company had been put into this barrack enteric fever broke out, and six cases occurred; it was therefore recommended that the barrack should be vacated, which was accordingly done; but the medical officer reporting on the occurrence of the disease in this block states that he had failed to find any local cause for its appearance. At Ahmednagar 17 cases occurred and 7 deaths. There was no case in the first quarter of the year, but 7 in the second, 6 in the third, and 4 in the last. At Mhow it is said that the evil repute of this station for enteric fever

was not maintained in the year under report, for it was much less prevalent than in the preceding year, only 10 cases having occurred. No insanitary defects were discovered; youth, and recent arrival in the country, appeared to be the only common causes. No cases occurred during the cold weather months. At Karachi the number of cases was again less than in the previous year, there being 9 admissions compared with 19 in 1887, and 33 in 1886. All the men attacked were under 25 years of age. Of the 9 cases 6 occurred in the hot humid months. At Neemuch 8 cases and 4 deaths occurred in the later months of the year. No cause could be assigned except youth and recent arrival. At Deolali 3 fatal cases occurred, one of which is believed to have been imported. At Colaba two young soldiers were attacked and both recovered, and there were also two cases, which recovered, at Kamptee. At Kirkee there was one case, in which relapse occurred, and it ended fatally. The single cases at Satara and Purandhar were, it is believed, contracted elsewhere; they both recovered. In his general remarks the Principal Medical Officer states that "the statistics of enteric fever for the year, and the reports from the several stations, show that as regards this special disease the past year has been a very unhealthy one. Some stations at which there had been no cases in 1887 were visited by the disease in 1888. In the former year 16 stations were free from enteric fever, in the latter only 12. At Poona there had been great reason to complain of the inadequacy of the conservancy arrangements as carried out by the municipality, and possibly the greater prevalence of enteric fever may have been influenced by the defective sanitation, but elsewhere there have not been any such defects to notice. The station and barrack conservancy generally has been satisfactory, and in no way worse than in the previous year. In short, no fresh light has been thrown on the special conditions causing such sickness and mortality from what is sometimes spoken of as a preventable disease. Only one point is everywhere brought to notice, that the prevalence of the disease and its fatal effects are almost exclusively confined to young and newly-arrived soldiers."

*Other continued fevers* caused 1,085 admissions but no deaths. The admission rate was 91.0 per 1,000, which is a little lower than the rate in the previous year, and than the average rate. The number constantly sick equalled 3.72 per 1,000, almost the same as the average of previous years. The greatest prevalence of these fevers was in the Sind district, the ratio amounting to 163.0 per 1,000, which is an increase of 76.0 on the rate in the preceding year. In the Bombay district the ratio, 134.6, shows a decline of 31.2. In the Poona circle the ratio, 89.0, has slightly decreased, and that in the Mhow division, 27.6, has declined by 16.8. In the Sanitaria the admission rate, which had fallen to 55.5 in the preceding year, increased to 116.6, the same as in 1886.

*Cholera* caused 10 admissions and 7 deaths, the admission ratio being .8, and the death rate .59 per 1,000; the former was lower than the corresponding rate in the preceding year by 2.7, and than the five years' average rate by 3.8, and the latter was lower in these comparisons by 1.89 and 2.60 respectively. In Abstract XXXII. is a table showing the stations at which the admissions and deaths from cholera took place in each quarter of the year, from which it will be seen that with the exception of one case in the second all the cases occurred in the third quarter. Four stations only were attacked as compared with eight in the previous year. At Poona 7 cases occurred, of which 5 died. The disease was prevalent in the city and surrounding villages more or less throughout the year. All the cases in barracks and hospitals occurred in the first half of the month of August; four were patients in hospital at the time of being attacked. The barrack room which gave the most cases was at Ghorpuri, and was occupied by the band, but it is looked upon as one of the healthiest barrack rooms in the lines. At Ahmedabad cholera was epidemic and severe for some months among the civil population, but only one case occurred among the British troops, which, however, ended fatality. There was also a fatal case at Ahmednagar, the origin of which was obscure, for the disease was not prevalent in the district. At Taragarh there was one case of cholera, which recovered; it is said that it was apparently contracted at Ajmere.



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**Dysentery.**—The admissions for dysentery numbered 253 and the deaths 9. The admission ratio, 21·2 per 1,000, is almost the same as that in the previous year, and the death rate ·75 shows a decline of ·22; both these ratios differ but slightly from the average rates. In Abstract XXXIII. is a table in which the prevalence of dysentery is shown in each of the administrative districts (including Sanitaria), and in Abstract XXXIV. is a table showing the prevalence of and mortality from this disease in each quarter of the year. The highest ratio of admission for this disease was 38·0 per 1,000 in the Sind district, in the previous year also this was the case, the ratio being slightly higher; in the Bombay circle the ratio, 23·1, shows a decline of 6·2; the next annual ratio was 17·9 in the Nagpore district, but this depended on a very few cases which occurred after the transfer of the district to the Command towards the end of the year. The ratios of prevalence in the Poona and Mhow circles, 17·6 and 16·0, have increased by ·4 and 3·0 respectively. Mortality was highest in the Mhow circle, 1·33 per 1,000, next in the Bombay district, 1·00, followed by Poona, with ·51; in the remaining districts no death occurred. With regard to the influence of season, the highest admission rate, as in the previous year, was 6·1 per 1,000 in the third quarter, followed by 5·4 in the fourth; the lowest being 4·6 in the first quarter. Mortality was highest in the first quarter of the year, ·41 per 1,000, and lowest in the second and third quarters, the rate being ·09 in each.

**Malarial fevers.**—3,976 admissions and 5 deaths are returned, being in the ratios of 333·4 and ·42 per 1,000. The admission ratio is higher than that of the preceding year by 60·8, but lower than the quinquennial average rate by 34·3; the death rate is lower in both these comparisons by ·29 and ·38 respectively. The constant inefficiency from these fevers was equal to 9·90 per 1,000, below the average by 1·40, but greater than in the previous year by ·72. Out of the total number of admissions 79 were cases of remittent fever, of which 4 proved fatal; one death from ague is also returned. These fevers were most prevalent in the Sind division, the admission rate being 492·5 per 1,000, an increase of as much as 338·7. The ratio in the Mhow district, 471·4, has declined by 121·1. The ratios in the Poona and Bombay districts, 311·3 and 138·4, have increased by 162·3 and 37·1 respectively. In the Sanitaria the admission rate, 371·0, shows a marked decline.

**Septic diseases** caused only 5 admissions as compared with 10 in 1887; they were all cases of erysipelas and did well.

In the sub-group of venereal diseases *primary syphilis* shows 777 admissions, or 65·1 per 1,000, which is below that in 1887 by 17·6; the average number constantly sick from this affection, 4·66 per 1,000, is lower by 1·91. If the sickness from simple venereal ulcers, which caused an admission rate of 51·6, and a constantly sick rate of 3·13, be added to the above, an admission ratio of 116·7 per 1,000 for primary venereal sores is obtained, and a constantly sick rate of 7·79. Comparing these with corresponding ratios in the preceding year a slight increase, 2·2, is observed in the admission ratio and a fractional decrease in the constantly sick rate, but comparing them with average rates for the previous five years an increase of 16·6 is observed in the former, and one of ·68 in the latter.

*Secondary syphilis* caused 410 admissions, equal to a ratio of 34·4 per 1,000, which is in excess of that in the previous year by 1·1, and of the average rate by 8·2. The ratio of constant inefficiency on this account, 2·80 per 1,000, is rather below the last year's rate though somewhat above the average.

**Gonorrhœa.**—The admissions numbered 2,310, equal to a ratio of 193·7 per 1,000; the prevalence of this affection has considerably increased, both as compared with the previous year's rate and with the average rate; the amount of increase being 54·2 and 59·9 respectively. The ratio constantly sick, 12·89 per 1,000, is higher by 4·12 than in the previous year, and than the average rate by 4·35.

Including all forms of venereal disease, the total admission rate amounted to 344·8 per 1,000, an increase of 57·5 over the rate in 1887, and of 84·7 on the quinquennial average rate. The total amount of constant inefficiency from these diseases was equal to 23·48 per 1,000, being 5·46 above the average rate, and 2·89 above the last year's rate.

By referring to Abstract XXIX. it will be seen that the greatest prevalence of venereal diseases (exclusive of simple venereal ulcers) was in the Poona district, the ratio being 360·2 per 1,000, an increase of 50·7; the next ratio was 324·9 in the Bombay district, an increase of 82·6, followed by the Mhow circle with 278·7, an increase of 41·5. The annual ratio for Nagpore was 243·7, and that for Sind 131·9. The latter was the lowest, and shows a decline of 69·2. The occurrence of the different forms of disease varied considerably in the different districts, the ratio for primary syphilis varying from 89·5 per 1,000 in the Poona district to 10·2 in the Sind district; secondary syphilis ranges from 52·4 per 1,000 in the Poona district to 20·8 in the Mhow district, and gonorrhœa varies from 225·6 per 1,000 in the Bombay circle to 97·9 in the Sind district. Taking the Sanitaria alone, the total admission rate was 247·4 per 1,000, of which more than half was the result of the admission of cases of secondary syphilis.

In the second group of general diseases, 49 admissions are shown for *parasitic diseases*, all but six being cases of *tænia solium*; the admission ratio, 4·1 per 1,000, shows a decrease.

*Scurvy* caused 13 admissions against 10 in the previous year; the cases were scattered over different stations. 122 admissions and 5 deaths are returned under the head of *alcoholism*. Six of the admissions were cases of delirium tremens, two of which proved fatal; the remaining three deaths are returned as alcoholism. The admission rate, 10·2 per 1,000, is below that in the previous year by 1·0. The greatest prevalence of alcoholism was in the Sind district, and the least in the Poona district.

*Debility, &c.* gave an admission rate of 27·6 per 1,000, which is below the last year's ratio by 3·5, and below the average rate. The highest admission ratio was 34·3 in the Bombay district, and the lowest, 3·6, in that of Nagpore.

*Rheumatism* caused 249 admissions, of which 5 were cases of rheumatic fever. The admission ratio was 20·9 per 1,000, which is below the previous year's rate by 6·8, and below the average. The greatest prevalence of rheumatic affections was, as in the previous year, in the Bombay district, the ratio being 29·2 per 1,000; in Sind, Poona, and Mhow districts there was but little difference in ratio of prevalence; all the ratios above alluded to were lower than the corresponding rates in the previous year.

*Tubercular Diseases*.—37 admissions and 6 deaths, including that of an invalid, are returned, being in the ratios of 3·1 and 5·1 per 1,000 as compared with 2·5 and 1·24 respectively in the previous year. All the admissions and deaths were due to tubercular disease of the lungs. Of the different districts Mhow gave the highest admission rate, 4·0 per 1,000, then Bombay 3·8, Poona 3·2, and Sind 1·3. In Mhow and Poona there was an increase of prevalence, but in the other two named districts a decrease.

From *other diseases* of this group there were 176 admissions, equal to a ratio of 14·7 per 1,000, as compared with 22·2 in the previous year. The admissions comprised 116 for non-malignant new growth, chiefly papilloma, 56 for anæmia, 2 for scrofula, and 2 for cancer. One death occurred in an invalid from cancer.

**LOCAL DISEASES.**—*Diseases of the Nervous System*.—185 admissions and 2 deaths are recorded, being in the ratios of 15·5 and 1·7 per 1,000. The admission ratio is slightly below the average rate for the preceding five years, but is above that for the previous year by 2·8. 61 of the admissions were for mental disease, the ratio being equal to 5·1 per 1,000 as compared with 4·6 in 1887. Excluding the Nagpore district, which belonged so short a time to the Command, it is observed that the prevalence of nervous diseases varied from 26·4 per 1,000 in the Bombay district to 7·5 in the Poona district, the ratios in the Sind and Mhow districts, 17·0 and 15·5, being midway. Compared with results in the preceding year a slight decrease of prevalence is found in the Bombay district, but an increase in the remainder. In the Sanitaria the admission ratio, 2·47, shows a slight decline. The principal causes of admission were neuralgia 73 cases, epilepsy 16, and paralysis 13. The principal mental affections were melancholia 25 cases, and dementia 18. One of the deaths was due to meningitis, and the other to abscess of the brain.

Bombay.

*Diseases of the Eye* were the cause of 179 admissions, equal to a ratio of 15·0 per 1,000, which is about the average rate, though lower than the ratio in the previous year by 3·6. The greatest prevalence of ophthalmic diseases was in the Mhow circle, 18·5 per 1,000, and the lowest, 11·7, was in the Poona district; in the previous year the latter district gave the highest ratio, a considerable decrease has therefore occurred. In the Sanitaria the admission ratio was in excess of that in the previous year. Out of the total number of admissions 127, or almost three-fourths, were cases of conjunctivitis.

*Diseases of other Organs of Special Senses.*—160 admissions are returned, being in the ratio of 13·4 per 1,000, about equal to the average rate, but lower than the rate in the preceding year by 2·1. As in the previous year the ratio of prevalence in the Sind district was very high, 40·8 per 1,000, the next in order being 10·1 in the Poona district, and the lowest 9·4 in the Mhow circle. Of the admissions all but two cases of epistaxis were aural affections, and of the latter 123 were inflammation of the external meatus.

*Diseases of the Circulatory System* caused 154 admissions and 9 deaths, being in the ratios of 12·9 and ·75 per 1,000. The admission ratio is a good deal below the average rate, though only fractionally below the previous year's rate. The mortality ratio is increased by ·48 in the latter comparison. Circulatory affections were most prevalent in the Bombay circle, the ratio being 20·9 per 1,000, and least in the Mhow circle 5·4. The Poona circle also had a comparatively high ratio, 15·8, and the Sind district a low one, 8·8. The ratios for Bombay and Sind are higher than the previous year, while those for Poona and Mhow are lower. Out of the total number of admissions, 95 are recorded as palpitation, and 45 as valve-disease of the heart. The deaths in the country were, four from fatty degeneration of the heart, two from valvular disease, and one from aneurysm of the aorta. The two remaining deaths were those of invalids, and were due to valvular disease of the heart.

*Diseases of the Respiratory System.*—256 admissions and 4 deaths are recorded, the ratios being 21·4 and ·33 per 1,000 respectively. The admission ratio is considerably below the quinquennial average rate and somewhat lower than the previous year's rate; the death rate has also declined by ·20. Prevalence of respiratory affections was greatest in the Sind district, the admission rate being 33·3; in the preceding year also this district gave the highest ratio, scarcely differing from the present one; the lowest ratio, also as in the previous year, was in the Poona circle, 13·6, which shows a decrease of 5·8. Of the total admissions 203 were for bronchial affections, almost four-fifths, and among the remainder were 14 cases of pneumonia and 16 of pleurisy. Three of the deaths were returned as bronchitis and the fourth as pleurisy.

*Diseases of the Digestive System.*—As many as 1,491 admissions are returned, and 21 deaths, including two of invalids. The ratio of admission was 125·0, and of death 1·76 per 1,000. The admission ratio is below the rate in the previous year by 16·4, and to a greater extent below the quinquennial average rate. The mortality ratio, on the other hand, is higher than in the preceding year by ·25, and is about the same as the average rate. The greatest prevalence of diseases of the digestive system in any circle was in Sind, the admission ratio being 185·4 per 1,000, and the least was in the Poona district (excluding Nagpore), the rate being 100·2. The admission ratio in the Bombay district was 147·0, and that in Mhow 115·3. Compared with corresponding results in the previous year a decline is observed in all the foregoing ratios, being as much as 26·4 in the case of the Mhow district. Mortality was greatest in the Mhow district, the rate being 3·03, and least in the Poona district, ·53 per 1,000; all the mortality rates in the districts show an increase. In the Sanitaria the admission rate, 144·9 per 1,000, shows a marked decrease, and there was no mortality. The diseases causing the greatest number of admissions were affections of the mouth and throat, 267 cases, dyspepsia, 310, diarrhoea, 412, and hepatic affections, 306 cases; the last named comprised 152 cases of hepatitis, 70 of congestion, 65 of jaundice, 18 of abscess, and one of cirrhosis. The deaths in the country are returned as follows:—8 from hepatic abscess, 2 each from hepatitis, peritonitis, diarrhoea, and enteritis, and one from intestinal obstruction, cirrhosis of the liver, and jaundice respectively. The deaths of invalids were from diarrhoea and hepatitis respectively.

The prevalence of dysentery, diarrhoea, hepatitis, and abscess of the liver in each division of the Command is shown in Abstract XXXIII. in a table taken from the report of the Principal Medical Officer; and the prevalence of and mortality from these diseases is shown in a table in Abstract XXXIV. The sickness and mortality from dysentery has already been mentioned. For diarrhoea alone the admission ratio was 34·5 and the death rate 17 per 1,000, as compared with 40·7 and 09 in the preceding year. The greatest prevalence of diarrhoea was in the Sind circle, the admission rate being 61·1 per 1,000, the Bombay district came next with 42·5, Mhow with 29·7, Poona with 26·2, and Nagpore with *nil*, but this district can hardly be taken into account, belonging to the Command only for the last three months of the year. Diarrhoea was most prevalent in the third and first quarters of the year, the ratios being 9·4 and 9·2 respectively, and least prevalent in the last quarter, the rate being 7·9. The ratio of admission for hepatitis and abscess of the liver was 14·3, and the death rate 84 per 1,000, being very nearly the same as the corresponding ratios in the preceding year. As in 1887 the district showing the highest admission rate was Bombay, 19·8 per 1,000; it is, however, rather less than in that year. Mhow gave a ratio of 16·7, which is an increase, and Poona and Sind 12·0 and 8·8 respectively, both of which have declined. Mortality was highest in Mhow, 2·00, next in Sind, 1·36, followed by 33 in Bombay, and *nil* in Poona. The greatest seasonal prevalence of these affections was, as in the previous return, in the third quarter of the year, the admission rate being 4·6 per 1,000, the next in order was 4·2 in the second, followed by 3·7 in the first, and 2·0 in the last quarter. Mortality was highest in the first quarter, 33, and lowest in the last, 15, the second and third, 18 each, being intermediate.

*Diseases of the Lymphatic and Glandular System.*—262 admissions and one death are recorded. The admission rate was 22·0 per 1,000, differing only fractionally from the previous year's rate but somewhat above the average rate. Excluding Nagpore, the highest ratio of prevalence in any district was 25·1 per 1,000 in Bombay, the next being 24·3 in Poona; the lowest ratio was 14·9 in Sind, Mhow being just above with 15·1. The majority of the admissions were for affections of the inguinal glands, and there were 25 admissions for diseases of the spleen. There was one death from lymphadenoma.

*Diseases of the Urinary System* caused 26 admissions and one death, being in the ratios of 2·2 and 08 per 1,000, as compared with 2·1 and 27 respectively in the preceding year. The chief causes of admission were cystitis and Bright's disease, and there was one death from acute nephritis.

*Diseases of the Generative System.*—917 admissions and 2 deaths are recorded, being in the ratios of 76·9 and 17 per 1,000. The admission ratio shows an increase of 16·4 over the previous year's rate. About two thirds of the admissions were due to simple venereal ulcer, and among the remainder the principal were balanitis, orchitis, and urethral stricture. There was one death from extravasation of urine, and one, an invalid, from urinary fistula.

*Diseases of Organs of Locomotion.*—82 admissions gave a ratio of 6·9 per 1,000, which is about the average, though above the last year's rate by 2·3. The majority of the admissions were due to synovitis, 51 cases.

*Diseases of the Connective Tissue.*—There were 196 admissions, equal to a rate of 16·4 per 1,000, rather below the average, but above the ratio in the previous year by 1·0.

*Diseases of the Skin* caused 1,122 admissions, equal to a ratio of 94·1 per 1,000, which is in excess of the previous year's rate by 23·9, and a good deal above the average. As in the preceding year, by far the greatest incidence of these diseases took place in the Sind district, as many as 429 admissions occurring. The ratio of admission for this district was 291·4 per 1,000, an increase of 112·6 on the corresponding ratio in the previous year. Low ratios, 59·8 and 58·5, are found in the Poona and Mhow districts. Ring-worm was the most frequent cause of admission, followed by boils, ulcers, whitlows, &c.

*Poisons.*—Under this head 12 admissions are returned. Eight were cases admitted for poisoning by fish, one for snake bite, one for scorpion sting, and one for poisoned wound from bite of a cat. All the cases recovered.

*Bombay.*

*Bombay.*

*Injuries.*—The admission ratio for injuries, 110·1 per 1,000, differs only by a decline of 1·3 from the corresponding rate in the previous year, but the death rate, 2·01, has slightly increased. General injuries were the cause of 34 admissions and 16 deaths. Of the admissions 18 were cases of heat apoplexy and 14 sunstroke; of the former 9 proved fatal, and of the latter 3, and there were two admissions for multiple injury. The remaining deaths were two from accidental drowning, one from strangulation, suicidal, and one from asphyxia from plugging of the air passages. Local injuries caused 1,280 admissions and 8 deaths. Five sixths of the admissions were due to contusions, wounds, or sprains, and among the remainder were 60 cases of fracture, and 5 of dislocation. Six of the deaths were due to gunshot wound; of these five were suicidal, and the other was a case of accidental homicide, a man being shot by his comrade who was trying a cap on a gun which had been carelessly left loaded. There was one death from fracture of the skull, and one from dislocation of the spine, both being the result of falls. In all there were six suicides; in three no motive could be discovered; in one the motive was supposed to be jealousy, in another illness, and in the third reduction to the ranks. A verdict of temporary insanity was returned in four instances, and in two no inquest was held.

The surgical operations recorded during the year were mostly of a minor character, among them were several of aspiration of the liver, and incision for draining hepatic abscess, which did well. One case of perineal section on account of stricture of the urethra, also some cases of removal of tumours gave satisfactory results.

*Invaliding.*—The number of men sent home as invalids during the year was 296, equal to a ratio of 24·82 per 1,000, which is lower than the corresponding rate in the preceding year by 3·28 and than the average ratio for the preceding ten years by 15·72.

Taking the different arms of the service, it is observed that in the cavalry the invaliding ratio was 25·40 per 1,000, and is lower than in the preceding year by 8·38. The invaliding rate in the 6th Dragoon Guards, at Mhow for over nine months, was 17·23. In the artillery the invaliding ratio amounted to 34·30 per 1,000; this also shows a decline, 11·27, as compared with the previous year's result. Among individual batteries of average annual strength of over 100 men the highest invaliding rate was in G Battery, 3rd Brigade, at Kirkee and Neemuch, and was 97·74 per 1,000; this was followed by E Battery, 2nd Brigade, at Ahmedabad, with a rate of 76·19, and then by J Battery, B Brigade, at Kirkee with 58·44; the lowest ratio was 7·52 in R Battery, 4th Brigade, at Nasirabad, then next 12·74, in T Battery, 1st Brigade, at Karachi, and then 16·53 in No. 4 Battery, 1st Brigade, South Irish Division, also at Karachi. The invaliding ratio in the infantry was 21·55 per 1,000, an increase of 2·48 on the rate in the preceding year. Of the different regiments the 2nd Battalion, North Staffordshire, a short time at Aden, gave the highest invaliding ratio, 53·76, the next being 43·69 in the 2nd Battalion, Yorkshire Light Infantry, at Karachi, and then 35·07 in the 2nd Battalion, Lancashire Fusiliers, at Ahmednagar; in two regiments there was no invaliding, and there were low ratios, 4·55 and 7·61, in the 1st Battalion, Royal Fusiliers, and the 2nd Battalion, Royal Lancaster Regiment, respectively.

The ratios of invaliding according to age and according to service in the country are shown in tables on previous pages, from which it will be seen that among men under 20 years of age the invaliding ratio was equal to 19·84 per 1,000, and among men between 20 and 25 years it rises to 26·31; in the succeeding quinquennia it gradually rises, until among men between 35 and 40 years the rate was 30·30, declining after that time. In the preceding year the ratios increased with age in a somewhat similar manner. With regard to length of service in the country, it is observed that the invaliding ratio of men in their first year of service in the country was 22·21 per 1,000, that among men in their second year rising to 37·06, then steadily declining in each year of service to the fifth, when it was 16·04, after which time it again became higher. This sequence is also similar to that in the preceding year.

The principal causes of invaliding were dysentery, 11 cases, equal to a ratio of ·92 per 1,000, which is lower than the corresponding ratio in the preceding year

by '68; secondary syphilis, 17 cases, or 1·42 per 1,000, a decline of '18; debility, 50 cases, or 4·19, a decrease of 1·75; rheumatism, 14 cases, or 1·17 per 1,000; tubercular diseases, 18 cases, or 1·51 per 1,000, a decline of '09; nervous diseases, 30 cases, equal to 2·51 per 1,000, an increase of '12 on the rate in the previous year (of these 19 cases, or 1·59, were mental affections, which gave an increase of '26); diseases of the circulatory system, 34 cases, or 2·85 per 1,000, a decline of 1·23; diseases of the respiratory system, 17 cases, or 1·42, an increase of '53; and diseases of the digestive system, 30 cases, or 2·51 per 1,000, an increase of '56.

The number of men finally discharged from the service as invalids was 165, equal to a ratio of 13·84 per 1,000, which is greater than the corresponding ratio in the preceding year by 1·52, but lower than the decennial average rate by 1·56. The principal disabilities necessitating discharge were secondary syphilis, 13 cases, equal to a ratio of 1·09 per 1,000, which is higher than the corresponding rate in the previous year; debility, 21 cases, or 1·76 per 1,000, an increase of '87; tubercular diseases, 11 cases, or '92 per 1,000, a decline of '50; nervous affections, 23, or 1·93 per 1,000, an increase of '16; of these 12, or 1·01 per 1,000, were cases of mental disease; diseases of the circulatory system, 23 cases, or 1·94, a decline of '45; and diseases of the respiratory system, 13 cases, or 1·09 per 1,000.

*Officers.*—The average strength of officers was 375, and there were 228 attacks of illness and 6 deaths, and 16 officers were invalided home during the year. The ratio of prevalence of sickness, therefore, was 608·0 per 1,000, which differs from the corresponding rate in the previous year by a decline of only 4·3. The mortality rate, 16·00 per 1,000, has increased by 7·58, and the invaliding rate, 42·67 per 1,000, has declined by 19·13 from the corresponding rate in the preceding year. Among the cases treated were four of small-pox, two of which had fatal result, 42 of simple continued fever, 4 of enteric fever, with one death, 5 of dysentery, 45 of malarial fever, 6 being cases of remittent fever. Among the remaining diseases the principal causes of sickness were diseases of the digestive system 37 cases, 10 of which were hepatic affections. Injuries caused 30 admissions, including 3 for fracture and one for concussion of the brain. Two deaths occurred from accidental drowning, and one from fracture of the base of the skull, the result of a fall. The causes of invaliding were dyspepsia 3 cases, debility 3, enteric fever, simple continued fever, remittent fever, and hepatitis 2 cases each, and hæmoptysis and cystitis one case respectively.

*Women.*—The average strength of women was 564, and there were 425 admissions into hospital and 17 deaths, being in the ratios of 753·5 and 30·14 per 1,000, which are higher than the corresponding ratios in the previous year by 36·5 and 14·13 respectively. Among the admissions were 2 for small-pox, one of which was fatal, 21 for simple continued fever, 2 fatal, one of enteric fever, fatal, one of cholera, fatal, and dysentery 12 cases, 2 fatal. Malarial fevers caused 77 admissions, 5 being cases of remittent fever, one of which died, and 2 fatal cases of septicæmia are recorded, also one fatal case of cancer. Debility shows as many as 138 admissions, though rather less than in the preceding year. Among local diseases were 7 admissions for nervous diseases, including 2 cases of mental disease. Valvular heart disease caused 3 admissions and one death, and there was also a death from fatty degeneration of the heart. Respiratory diseases show 11 admissions, chiefly bronchitis, but there was one fatal case of pneumonic phthisis. The admissions for disorders of the digestive system numbered 51, the most frequent being diarrhoea, 15 cases, dyspepsia 10, hepatic affections 12 cases, including one of abscess of the liver. One death is returned as gastritis and one as nephritis. Diseases of the generative system caused 52 admissions, including 17 cases of abortion, one of which proved fatal.

*Children.*—The average strength of children was 1,075; the admissions into hospital numbered 452, and there were 65 deaths. The admission ratio therefore was 420·5, and the death rate 60·46 per 1,000. Compared with corresponding results in the previous year there is a decrease of as much as 156·0 in the admission ratio, but the mortality rate is increased by 7·06. Eruptive fevers caused 46 admissions, among them were 3 cases of small-pox and 40 of measles, with three deaths. Whooping cough gave 13 admissions, and there

*Bombay.*

was a fatal case of diphtheria. The admissions for simple continued fever numbered 38, and there were 4 deaths from it. Malarial fevers show 72 cases, 10 being remittent fever, two of which died. Erysipelas was the cause of one fatal case. Under developmental diseases 12 deaths are recorded, 5 being immaturity at birth and the remainder debility. Tubercular disease gave 4 cases and 3 deaths, and one death is returned from anæmia. There were 15 admissions for nervous diseases, including 10 fatal cases of convulsions and one of meningitis. Respiratory diseases caused 24 admissions, mostly for bronchitis, from which there was one death; there was also one death from pneumonia. The admissions for digestive disorders were 97 in number, 53 with 9 deaths being for diarrhoea, and 29 with 12 deaths for teething. The admissions in the remaining orders were not numerous, but there was one death from Bright's disease, one from burns, and two from drowning.

**SANITARY CONDITIONS.**—The Principal Medical Officer in his report notices the following points regarding the health and sanitary conditions of the different districts and stations.

*Bombay District.*—At Colaba the general health was good, and the sanitary state of the barracks and hospital was satisfactory generally; some of the defects which had been previously brought to notice were rectified, and several alterations and improvements in the ablution and bath accommodation were effected. It is mentioned that the want of suitable wards in the hospital for the accommodation of lunatics awaiting embarkation has been found to be a great inconvenience, and it is recommended that other arrangements should be made. At Deolali the sanitary condition of barracks and hospital was satisfactory, but increased cell accommodation is said to be much required. Measures were taken for the necessary provision. At Ahmedabad the reports as to the sanitary condition of the barracks and quarters were generally satisfactory. An objectionable arrangement with regard to the overflow of water from one of the wash houses, which had been previously brought to notice was rectified. At Deesa the general health of the troops which had been good in the previous year still further improved. The reports as to the state of sanitation of the barracks and hospital were of a satisfactory character, and the water supply is said to be sufficient and of good quality. At Mount Abu the sanitary condition of the quarters, as well as that of the hospital, was favourably reported on. Some defect in the ventilation of latrines which had been brought to notice was rectified. There was a considerable diminution in the amount of sickness during the year, which was due to the immunity enjoyed from the fever which usually prevails at the end of the rainy season; this satisfactory condition doubtless resulted from the unusually scanty rainfall. The medical officer in charge at Mount Abu remarks that the number of women and children sent up during the year was very small in proportion to the excellent accommodation and handsome building set apart for families, and considering the deteriorating effect of the heat of the plains on European children he urges that all these quarters should be occupied during the hot months. There is an objection on the part of the families at present, but this is due to the fact that as a rule they are sent up independent of the husbands which entails on the family increased expense and divided resources while only half rations are granted. The medical officer presses that these conditions should be ameliorated. At Aden the sanitary condition of barracks and hospital was satisfactory. There was more sickness than in the previous year, but this is attributed to the unusually numerous changes and reliefs. There was, however, no epidemic disease.

*Poona District.*—The general health of the troops was only fairly good. Cholera occurred at all stations except Purandhur and Khandala, and small-pox also occurred in some stations. The general sanitary state of the barracks at Poona was good, although Ghorpuri barracks gave an excessively high average, particularly No. 5 barrack. The Principal Medical Officer states that "the nullah to the westward of it has been levelled and widened to "allow of the free flow of water through it; but although there is a small "stream along the upper part of the nullah this disappears opposite Ghorpuri "barracks, which keeps up the moisture in this unhealthy region. A hedge "has been planted to the westward of No. 5 barrack to protect it from the

“ strong winds. Up to the present the alterations made under the superintendence of the sanitary commissioner have had no decided effect in “ reducing the number of cases of fever, but the effect of the coming hot and “ rainy seasons will be viewed with interest as some deduction ought to be “ arrived at by the amount of disease developed, in this barrack compared “ with others, as all the surrounding circumstances ought to give an improved “ result.” At Kirkee the general health of the troops was satisfactory, as also the sanitary condition of the barracks and hospital generally; but the waste water drainage is still defective in barracks. In the hospital the conservancy was satisfactory, but the establishment formerly allowed for this purpose was stopped, and the work falls on the men on duty. At Ahmednagar the sanitary state of barracks and hospital was satisfactory. Two rows of married quarters were converted during the year into single men’s barracks, and new lavatories are in course of construction. At Satara there was slight overcrowding in barracks owing to it not having been found practicable to allow men to remain in the fort on account of the questionable character of the water supply. This, however, was practically counteracted by the fact that several men were constantly in hospital on account of venereal disease, in consequence of which it was necessary at times to supplement the hospital accommodation by tents. The barracks, as well as the hospital, were in a satisfactory sanitary condition. At Purandhur sanitarium a special recommendation was made for the provision of firewood for drying and warming the barracks and hospitals, and an allowance for the monsoon in the next year was sanctioned, but the medical officer thinks that it will hardly be sufficient. As in former years, convalescents from debility, enteric fever, and ague did well, but those suffering from cardiac and hepatic diseases, dysentery, &c. received little benefit. At Khandala the hospital accommodation was satisfactory, as also the sanitary condition of the barracks. It is suggested that the sanitarium should be open for at least three months of the hot weather.

*Mhow District.*—At Mhow the sanitary state of barracks and hospitals was good, and several minor improvements were carried out. The Bercha Waterworks scheme was completed, and water was laid on to all the public buildings, giving a plentiful supply of good quality, which will be still further improved when the filter beds, in course of construction, are completed. At Nasirabad there was a decrease in the amount of sickness, chiefly owing to the lessened prevalence of ague. The sanitary state of barracks and hospitals was satisfactory. At Neemuch the health of the troops was improved as compared with the preceding year. About half the sickness was due to malarial fevers, which, however, were generally of a mild type. The sanitary state of the barracks, hospitals, and subsidiary buildings was very satisfactory. At Indore there was rather more sickness than in the previous year, chiefly due to the prevalence of ague and venereal disease. The quarters of the men, and also the hospital, were in a satisfactory sanitary condition. At Khundwa rest camp sanitation was generally good, but it was occasionally necessary to supplement the accommodation by tents. The sanitarium of Taraghur was open for seven months, April to October inclusive, but the average number of men there was small. The sanitary condition of the barracks, as well as that of the hospital, is reported to have been good.

*Sind District.*—The general health of the troops was good, but there was a considerable increase in the prevalence of malarial and continued fevers over the amount in the previous year, and these diseases caused most of the illness. At Karachi the health of the troops was good; but there was a considerable increase of ague of a mild type, many cases of which were the result of previous residence at Quetta. A number of men were sent to Ghizree sanitarium with good result. Sanitary conditions were satisfactory at Karachi. At Hyderabad the health of the troops was very good, and both barracks and hospitals were in a satisfactory sanitary condition. Ague and venereal disease caused most sickness, the former being more and the latter less prevalent than in the preceding year.

*Nagpore District.*—This district was only transferred to the Bombay Command in October, but it is stated that the general health of the troops at Kamptee and at Sitabuldi was fairly good, and though the admissions to hospital were numerous there was little serious sickness, and no epidemic disease, and the sanitary condition of the stations, together with that of the barracks and hospitals, was satisfactory.



## XIII.—ON THE HEALTH OF THE TROOPS SERVING IN EGYPT.

*Sickness and Mortality.**Egypt.*

The average strength of British troops serving in Egypt was 3,346 warrant officers, non-commissioned officers, and men. The stations occupied during the year were Cairo, Abbasiyeh, Alexandria, Assuan for a short period, and Suakin from 1st to 31st December. The force in Egypt consisted of a detachment 20th Hussars, No. 3 Battery, 1st Brigade, Northern Division, Royal Artillery, 1st Battalion the Welsh Regiment, detachment, Royal Engineers, detachment of mounted infantry, detachments Departmental Corps, and Garrison Staff throughout the year. The following corps present on 1st January left the garrison, the headquarters 1st Battalion Royal Fusiliers in January, 1st Battalion Yorkshire Regiment in February, and the 3rd Battalion Rifle Brigade in August.

The following corps joined the garrison during the year,—the headquarters and a detachment of the 2nd Battalion King's Own Scottish Borderers, and the 2nd Battalion Royal Irish Rifles.

The principal health statistics of these troops, will be found in the sub-joined table, and those of the individual corps in Abstract XXXIX.

| 1898.<br>Average Strength. | Admissions. | Deaths.         |              |        | Invalids   |                     | Average daily Sick. | Ratios per 1,000 of Strength. |         |                     |                              |                |
|----------------------------|-------------|-----------------|--------------|--------|------------|---------------------|---------------------|-------------------------------|---------|---------------------|------------------------------|----------------|
|                            |             | In the Command. | Of Invalids. | Total. | Sent Home. | Finally Discharged. |                     | Admissions.                   | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constant Sick. |
| 3,346                      | 3,428       | 48              | 1            | 49     | 75         | 53                  | 216·09              | 1024·5                        | 14·64   | 22·41               | 15·84                        | 64·58          |

Compared with the corresponding ratios for the previous year a decrease of 79·6 per 1,000 has occurred in the admission ratio, one of ·72 in the death rate, and of 4·66 in the rate of constantly sick; and in comparison with average similar ratios for the preceding five years these three rates have declined by 258·1, 13·08, and 11·20 per 1,000 respectively. The average sick time to each soldier was 23·64 days, which is shorter than in the previous year by 1·64 days, and than the average corresponding period for the preceding five years by rather over four days, while the average duration of each case of sickness, 23·07 days, was fractionally longer in the previous year, and longer than the average period by a day and a half.

The following table shows the relative sickness and mortality at the principal stations in the Command :—

| Stations.            | Average Strength. | Admission. | Deaths. | Ratio per 1,000. |         |
|----------------------|-------------------|------------|---------|------------------|---------|
|                      |                   |            |         | Admission.       | Deaths. |
| Cairo - . . . .      | 2,183             | 3,391      | 36      | 1049·4           | 16·4    |
| Alexandria - . . . . | 1,061             | 1,000      | 10      | 1027·3           | 9·4     |

Compared with similar results in the preceding year the ratios of admission and mortality at Cairo have declined by 174.1 and 3.4 per 1,000 respectively, while at Alexandria there is an increase of 38.6 per 1,000 in the admission ratio and a decrease of .5 in the rate of mortality.

The ratios of sickness and mortality of the different arms of the service during the year were as follows:—Cavalry: admission rate 744.0, death rate 24.00, and constantly sick rate 57.44 per 1,000; of these the ratios of sickness show a decline as compared with those of the preceding year, but the death rate is higher. In the artillery the admission rate equalled 815.4, the death rate 23.08, and the constantly sick rate 45.00 per 1,000; here also the death rate shows an increase; but the sick rates have declined. In the engineers the ratios of admission and constant inefficiency were 594.3 and 38.11 per 1,000, considerably lower than in the previous year, and there was no mortality. In the infantry the admission rate was 1155.4, the death rate 15.05, and the constantly sick rate 71.95, all somewhat below corresponding rates in the preceding year. The departmental corps gave ratios of admission 435.1, death 10.17, and constant inefficiency 31.73 per 1,000, each of which shows a decrease.

With regard to sickness and mortality in individual corps, it will be seen from tables in Abstract XXXIX. that the highest annual admission ratio occurred in the King's Own Scottish Borderers, and reached 1686.2 per 1,000; the death rate, 34.48, was also the highest in the Command. This regiment was only the last five months of the year in the Command, and of this time was four months in Cairo and one month in Suakin. The highest rate of constantly sick, 85.52 per 1,000, of any corps with fair average strength was also in this regiment. The admission ratios of the Royal Irish Rifles and the Welsh Regiment were also high, 1162.9 and 1097.4 per 1,000 respectively. The 3rd Battalion Rifle Brigade had a lower ratio of admission, 972.5 per 1,000, but a mortality rate of 14.80. The death rate of the Welsh Regiment was 15.18, and that of the Royal Irish Rifles 12.44 per 1,000. The admission rate of the cavalry regiment, the 20th Hussars, was low, 744 per 1,000, but the death rate was 24.00, dependent on three deaths.

With regard to the influence of age on sickness, it has been calculated that the admission ratio of men under 20 years of age was 1245.2 per 1,000, between 20 and 25 years of age 1253.4, falling in the next quinquennium to 661.8, and still further in those succeeding. In the preceding year also the highest ratios were at the same ages, falling off subsequently. Mortality was equal to 19.23 per 1,000 among men under 20 years, 17.65 among men between 20 and 25 years, 8.99 among men between 25 and 30 years, &c.; but of the 48 deaths, 34 were of men between 20 and 25 years old.

As to the influence of service in the Command on sickness and mortality, it is observed that the admission ratio of men in their first year of service was 1185.7 per 1,000, of men in their second year 1042.4, of men in their third year 894.4, and of men in their fourth year 434.1. The strength of men in their fifth year of service and over that time is small. In the preceding year it was noticed that the highest admission rate was among men in their second year of service. With regard to mortality, 30 of the deaths, equal to 16.99 per 1,000, occurred among men in their first year of service, 9 deaths, or 16.10 per 1,000, among men in their third year of service, 8, or 12.56 per 1,000, among men in their second year, 1 death, or 3.21 per 1,000, occurring in a man in his fourth year of service. In the preceding year the death rate among men in their fourth year was 19.72, that among men in their second year of service being nearly as high, 18.90, while that of men in their first year in the country was 12.14 per 1,000.

The sickness, mortality, &c. according to the different groups and orders of diseases are shown in Abstract XXXV.

**GENERAL DISEASES.—Diseases dependent on Morbid Poisons.**—Under the head of *eruptive fevers*, 17 admissions are shown, of these 14 were cases of small-pox, 4 of which proved fatal. The ratio of admission for small-pox was 4.2 per 1,000, which differs but very little from the rate in the previous year and from the average rate for the preceding five years; the death rate, 1.19 per 1,000, however, shows an increase in each of these comparisons. All the cases occurred in Cairo, but were not confined to any particular corps or barrack, 5 coming from the Welsh Regiment in Kasr-el-Nil Barracks, 4 from

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the King's Own Scottish Borderers, 2 from the 3rd Battalion Rifle Brigade, 1 from the Artillery, and 1 from the Medical Staff Corps, all from the Citadel Barracks; also one from the Corps of Armourers at Kasr-el-Nil Barracks. The remaining admissions for eruptive fevers were two cases of scarlet fever (one at Cairo and one at Alexandria) and a case of chicken-pox.

*Enteric Fever* caused 96 admissions and 20 deaths, being in the ratios of 28·7 and 5·98 per 1,000 respectively. In the preceding year the admission ratio was 29·8 and the death rate 7·02 per 1,000; the ratios in the year under report show, therefore, a slight decrease, and compared with average ratios for the previous five years there is a decrease of 16·1 per 1,000 in admission rate and 6·33 in the death rate. The ratio of constantly sick from this disease was 5·48 per 1,000, fractionally above the corresponding rate in the preceding year, but below the average rate by the same amount. The mortality to attack was at the rate of 20·8 per cent. as compared with 23·5 in the preceding year.

The following table shows the relative sickness and mortality from this disease at the two principal stations:—

| Stations.      | Average Strength. | Admission. | Deaths. | Constantly Sick. | Ratio per 1,000 of Strength. |         |                  |
|----------------|-------------------|------------|---------|------------------|------------------------------|---------|------------------|
|                |                   |            |         |                  | Admission.                   | Deaths. | Constantly Sick. |
| Cairo . . .    | 2,183             | 65         | 14      | 13·38            | 29·8                         | 6·41    | 6·18             |
| Alexandria . . | 1,061             | 80         | 6       | 4·50             | 28·3                         | 5·65    | 4·24             |

The Principal Medical Officer, Surgeon-General J. A. Marston, M.D., C.B., remarks, "As regards climate, no doubt the maxima of heat and of certain forms of disease correspond pretty closely, and the liability to contract these diseases is greatly increased in corps composed, for the most part, of very young men recently arrived in a tropical or sub-tropical climate; still, climate is not *per se* the cause, and the climate of Egypt is, with the exception of a limited portion of the year, excellent.

"It is the experience of all observers that the period of greatest liability to enteric fever ranges from about 20 to 30 years of age in all countries; and as regards the army, it may be said to be composed almost exclusively of men of the typhoid fever age.

"The death rate of the civil native population in Egypt is very high, but enteric fever does not appear to be at all common among the civil community, a fact which has its parallel in India and elsewhere.

"As enteric fever is a disease which does not usually repeat itself in the same individual, this relative immunity of the civil population can be accounted for in two ways—either that the constitution pays its tribute to the enteric fever causes in early life (and goes to swell the list of diarrhoea), so that the adult population represents the survival of the fittest, or that the constitution having been constantly exposed to insanitary conditions, gets accommodated to and acquires protective properties against their action, as we know to be the case under the exhibition of minimised doses of mineral, organic, or animal poisons. But the facts would rather point, perhaps, to racial and inherited physical qualities eradicating or diminishing the predisposition to certain diseases to which other races, recently arrived, are liable."

Of the 30 cases which occurred in Alexandria, it is shown that 28 occurred in the 2nd Battalion Royal Irish Rifles, recently arrived from England, and at Cairo in the 2nd Battalion King's Own Scottish Borders, described by the medical officer in charge as a "very youthful battalion," which arrived direct from England towards the end of July, about the most unhealthy time of the year there were 23 cases of this disease.

*Simple Continued Fever* caused 444 admissions, but no deaths are returned under this head. The admission ratio, 132·7 per 1,000, though high is not

so great as in the previous year by 74·4, or as the average ratio for the preceding five years by 38·6. The ratio of constantly sick from these fevers, 3·95 per 1,000, is also lower in both these comparisons by 2·74 and 3·44 respectively. Of the total number of cases 392 occurred at Cairo, 49 at Alexandria, 2 at Assuan, and 1 at Suakin. With regard to seasonal prevalence, it is stated that this disease reached its maximum in the month of August, when there were 30 admissions, and its minimum in February, when there were only 6 admissions. It is also remarked that many of the cases were no doubt, in reality, mild forms of enteric fever.

*Dysentery* was the cause of 168 admissions and 8 deaths, being in the ratios of 50·2 and 2·39 per 1,000. Compared with corresponding results in the previous year there is an increase of 6·6 in the admission rate, and one of 1·44 in the mortality rate, while the constantly sick rate, 3·64 per 1,000, also shows a fractional increase; and compared with average ratios for the preceding five years a slight decline is observed in the ratios of admission and constant inefficiency on this account, but there is an increase of 36 in the mortality rate. 81 of the cases occurred in Alexandria, 85 in Cairo, one at Assuan, and one at Suakin. The Principal Medical Officer makes a few remarks on the therapeutics of this disease, and states that were he required to sum up the treatment of dysentery in one word, he would reply—purgation. He adds:—“Everything depends, in the first place, on early treatment, and in the second, on the avoidance of opiate astringents at a time when an opposite treatment is required. *Ipecacuanha* in large doses is no doubt an excellent and, on the whole perhaps, the best remedy for this disease, especially in the plains of India and tropical countries. It acts, probably, by relaxing the mucous membrane of the whole muco-enteric tract and causing a copious excretion from that membrane, and the glands and follicles. But it does not seem to be generally known that the treatment by sulphate of magnesia in drachm doses every hour until a free flocculent flow is established is most efficient in acute dysentery in an early stage. The sulphate of magnesia may be prescribed in combination with other drugs. Diet should be milk with bland fluids, like barley water. This treatment is frequently adopted in America, and it is occasionally pursued in Egypt by the local physicians.”

*Malarial Fevers* show a great decrease as compared with the previous year, and also in comparison with the average rate for five years. During 1887 there were 126 cases admitted, equal to a ratio of 23·9 per 1,000, whereas in the year under report there were only 13 cases admitted, or a ratio per 1,000 of 3·9. The Principal Medical Officer states that “the cause of this difference is attributable to the fact that in 1887 the disease was for the most part contracted in Mex Camp, which during the prevalence of southerly winds was exposed to the malarious emanations from Lake Mareotis as it dried up on the subsidence of high Nile. This camp has since been changed to a healthier site with the beneficial result stated.”

*Veneral diseases* caused a large amount of inefficiency, and the Principal Medical Officer thinks that it would be extremely difficult, if not altogether impracticable, to prevent it. The number of admissions for *primary syphilis* was 285, equal to a ratio of 85·2 per 1,000, and the ratio constantly sick was 6·49 per 1,000. Compared with corresponding ratios in the previous year a considerable increase is noticed in each instance, 45·8 in the former and 2·90 in the latter. If, however, the sickness from simple venereal ulcer be taken into account in both years, it is found that the admission ratio for primary venereal sores was 137·8 per 1,000, higher than that in the preceding year by only 4·1, and lower than the average rate of five years by 31·2. The ratio constantly sick, 9·90 per 1,000, is lower in both comparisons by 1·34 and 2·58 respectively. *Secondary syphilis* caused 82 admissions, being in the ratio of 24·5 per 1,000, which is lower than that of the previous year by 8·3, and than the quinquennial average rate by 4·5; the ratio constantly sick was 2·38 per 1,000 lower than in the preceding year by ·66, but above the average rate by ·12. *Gonorrhœa*.—343 admissions give a ratio of 102·5 per 1,000, an increase of 11·8 on the previous year's rate and one of 2·8 on the average rate. The constantly sick rate was 6·24 per 1,000, fractionally lower in the former comparison and fractionally higher in the latter. Including all forms of venereal affection, the total admission rate for these diseases amounted to 264·8 per

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1,000. This is only 7·6 higher than the corresponding rate in 1887, but it is below the quinquennial average rate by 32·9. The total amount of constant inefficiency from these diseases was equal to 18·52 per 1,000, which is below the average rate by 2·17, and below the previous year's rate by 2·66 per 1,000.

The next group of diseases comprises 15 cases of *parasitic* disease, all being *tænia solium*, and 28 cases returned as *alcoholism*, of which 2 were cases of delirium tremens; no death occurred. The admissions for *debility*, 39, gave a ratio of 11·6 per 1,000, which is only about half that recorded in the preceding year.

*Rheumatism*, with a ratio of admission of 14·3 per 1,000, scarcely differs in prevalence from the preceding year, but was below the average in frequency. Out of 48 admissions there were 3 cases of rheumatic fever, one of which proved fatal.

*Tubercular Diseases*.—19 cases of lung affection are returned, from which there were 3 deaths, one being that of a man on furlough. The admission ratio, 5·7 per 1,000, shows an increase over the rate in the preceding year.

The remaining admissions for general diseases were chiefly cases of papilloma.

**LOCAL DISEASES.**—*Diseases of the Nervous System*.—29 admissions are returned, being in the rate of 8·7 per 1,000, an increase of 3·6 on the rate in the previous year, but a good deal below the average. 8 of the admissions were for mental disease, 18 for neuralgia, 2 for paralysis, and there was one fatal case of cerebral abscess.

*Diseases of Organs of Special Senses*.—Ophthalmic affections caused 143 admissions, chiefly conjunctivitis, the admission rate, 42·7 per 1,000, is below the average, and by 6·0 than the previous year's rate. Aural diseases, principally inflammation of external meatus, gave an admission rate of 12·8 per 1,000, a slight increase on that of last year.

*Diseases of the Circulatory System* caused 57 admissions, equal to 17·0 per 1,000, which is about the average rate though in excess of that of the previous year by 4·5. More than half the admissions were for palpitation, and among the remainder were 8 cases of valvular disease of the heart.

*Diseases of the Respiratory System* were slightly more prevalent than in the preceding year, but still below the average, the admission rate being 22·1 per 1,000. Among 74 cases treated 49 were bronchitis, and among the remainder were 9 of pneumonia and 9 of pleurisy; 2 deaths occurred from pneumonic phthisis.

*Diseases of the Digestive System* caused 377 admissions and 5 deaths, being in the ratios of 112·7 and 1·49 per 1,000 respectively. The admission ratio shows a decline of 7·2 from the rate in the previous year and is below the average rate. The principal causes of admission were affections of the mouth and throat 101 cases, dyspepsia 57, diarrhoea 88, and hepatic affections 72 cases. The deaths were due to gastritis, abscess of tonsil, acute yellow atrophy of liver, hepatitis, and abscess of the liver respectively.

*Diseases of the Lymphatic and Glandular System* caused an admission rate of 29·9 per 1,000, slightly below that of the previous year but still above the average rate.

*Diseases of the Generative System* gave a rate of admission of 81·9 per 1,000, a decline of 36·5 from the previous year's rate; this is due chiefly to the decrease in the number of simple venereal ulcers returned. The remaining orders of local diseases all show a slight decrease of admission rate as compared with the corresponding rate of the previous year. None of them call for particular notice.

*Poisons*.—One admission is shown, this was a case of attempted suicide by poisoning by oxalic acid; the man was, however, promptly treated and recovered. One death is recorded, and is that of a man who died out of hospital from alcoholic poisoning.

*Injuries*.—The ratio of admission was 102·5 per 1,000, an increase of 11·8 on the last year's rate and above the average rate. There were 6 admissions for general injuries, comprising 5 for sunstroke and 1 for multiple injury resulting from a fall from a window while more or less under the influence of drink; there was also one death from multiple injury, out of hospital, resulting from a fall from a window. The admissions for local injury numbered 337 and there

were two deaths. Over three fourths of the admissions were due to contusions, wounds, or sprains, and among the remainder were 15 cases of fracture, 3 of dislocation, and 1 of contusion with rupture of viscera, the man having fallen off a transport wagon, a wheel of which then passed over his body. There was also a death from fracture of the skull resulting from a fall from a horse.

*Invaliding.*—The number of men invalided home during the year was 75, being in the ratio of 22·41 per 1,000 as compared with 26·74 in the previous year, and with a five yearly average rate of 87·36. The highest invaliding ratio of corps which served some time in the garrison was 35·94 per 1,000 in the 3rd Battalion Rifle Brigade, and the lowest, 3·45, in the King's Own Scottish Borderers, this regiment was only five months in the Command and arrived from home. With regard to the age of the men invalided, 45, or 23·36 per 1,000, were between 20 and 25 years of age, 17, or 19·10 per 1,000, between 25 and 30 years, and 7, or 33·65 per 1,000, under 20 years of age. As to length of service in the Command, 39 men, or 22·68 per 1,000, were invalided in their first year of service, 20, or 31·40 per 1,000, were in their second year of service, 11, or 19·68 per 1,000, in their third year, and 5 over three years' service. The principal causes of invaliding were enteric fever, 10 cases, or 2·99 per 1,000, dysentery, 3 cases, or ·89 per 1,000, nervous affections, 10 cases (including 9 of mental disease), or 2·99 per 1,000, and diseases of the circulatory system, 9 cases, or 2·69 per 1,000; all the foregoing ratios show a decrease as compared with corresponding rates in the previous year; but tubercular disease with a ratio of 3·59 per 1,000, dependent on the invaliding of 12 men, and diseases of the respiratory system, 9, or 2·69 per 1,000, have increased by 3·02 and 2·50 respectively. The number of men finally discharged the service by invaliding was 53, equal to a ratio of 15·84 per 1,000, which is below the ratio in the previous year by 1·42 and below the average rate for five years by 13·32 per 1,000. The principal disabilities necessitating discharge were nervous diseases, 12 cases (including 10 of mental affection), or 3·59 per 1,000, diseases of the circulatory system, 10, or 2·99 per 1,000, and diseases of the respiratory system, 6 cases, or 1·79 per 1,000.

*Officers.*—The average strength of officers was 130, the number of attacks of illness 70, there was one death, and 10 officers were invalided. The ratio of sickness was therefore 538·5 per 1,000, the death rate 7·69, and the invaliding rate 76·92 per 1,000. Compared with the last year's return the ratio of prevalence of sickness has declined by 234·9 per 1,000, but the rate of mortality has increased. Among the attacks of illness were one case of diphtheria, fatal, 3 of enteric fever, and 7 of dysentery. Among local diseases diarrhoea and hepatic affections caused most illness. The causes of invaliding were dysentery and debility two cases each, and enteric fever, ague, pleurisy, diarrhoea, congestion of the liver and fracture, one case respectively.

*Women.*—The average strength was 134, and there were 216 admissions and 2 deaths, being in the ratios of 1611·9 and 14·93 per 1,000, which are greater than the corresponding ratios in the previous year by 211·9 and 8·27 per 1,000 respectively. The principal causes of admission were fevers, 57 cases, including 2 cases of small-pox and 6 of enteric fever; debility, 37 cases; dyspepsia, 20; diarrhoea, 12; and disorders of the generative system, 18 cases. The deaths were caused by enteric fever and nephritis respectively.

*Children.*—The average strength was 195, and there were 306 admissions and 21 deaths. The admission rate was 1569·2 and the death rate 107·69 per 1,000, the former being increased by 323·4, and the latter by 73·80 over the corresponding rate in the previous year. Fevers caused 29 admissions, including 4 cases of enteric fever; dysentery, 6 cases; conjunctivitis, 88; bronchitis, 31; teething, 12; diarrhoea, 36, &c. The causes of death were diarrhoea, 3 cases; teething, 3; debility, 3; enteric fever, tubercle, convulsions, bronchitis, 2 cases each, and dysentery, valve disease of heart, pneumonia, and gastritis, one case respectively.

*SANITARY CONDITIONS.*—The Principal Medical Officer states that wherever the causes of disease were preventable or removable the best was done from time to time to accomplish this end. He adds, however, that notwithstanding all efforts to keep and maintain the barracks in "a wholesome and salubrious state the cities of Cairo and Alexandria in which the troops are stationed are very insanitary places and their inhabitants very unhealthy. In the year 1887, for example, the death rate in London was 19·5 per 1,000,

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"whereas in Cairo it was 46·8, an excess of 27·3 per 1,000. At Alexandria the mortality was 43 per 1,000 for the same year. The mortality in Cairo is about 15·7 per 1,000 over that of the most unhealthy European town."

In a memorandum on the sanitary condition of the army of occupation in Egypt, Surgeon-General Marston, having spoken regarding the prevalence and causes of enteric fever in Egypt among the troops as well as among the civil population, goes on to remark as follows:—

"Stated briefly, the air as well as the soil of the cities of Egypt is fouled, and the water derived from a source polluted by the products of sewage instead of being obtained from a site altogether or relatively free from these.

"It is obvious that very great improvements have taken place in the sanitary condition of the barracks since 1882. The barracks are generally clean, wholesome, and well ventilated, the men are not overcrowded, and when sick they are thoroughly well cared for in every way.

"Once outside the barracks, however, the soldier, and especially the young, newly arrived and unseasoned soldier, is exposed to a number of unhealthy conditions.

"Cairo, in addition to consisting of old and overcrowded bazars and buildings, is a city of cesspits; open spaces and canals are fouled by men and animals, it is very dusty and dirty, the surface of the roads and streets, instead of being hard and compact, is loose, uneven, and badly paved, and the surface cleanliness, though much improved since 1882, is not systematically attended to. The atmosphere of the city has a smell of decomposing organic matter.

"It is true that Egypt being, practically speaking, rainless, the factor of moisture in organic putrefaction is absent, but this has some disadvantages, in that all kinds of animal and organic impurities after being desiccated in the sun get blown about as an impalpable dust, while the heavy rainfall in other and tropical countries periodically flushes away all surface and other impurities.

"At certain periods of the year the height of the ground water is greatly affected by the rise and fall of the Nile; and there is some reason for supposing that a connexion exists between the rise and subsidence of the ground water and the liability to such diseases as typhoid fever.

"The houses and cafés, commonly frequented by soldiers, are often situated in the most overcrowded and unhealthy parts; the rooms into which the soldier goes are generally overcrowded and the air vitiated, with little or no ventilation, and there is no guarantee whatever that any beverage or liquor sold therein is good and wholesome, probably quite the reverse.

"Where there are so many insanitary surroundings and conditions of life the difficulty is to indicate any one cause or condition as specially operative.

"The habits and customs of the natives are such that it is impossible to be sure of what the soldier gets in his visits to cafés; for example, the water is kept in large porous earthenware filters (zeers), and these are frequently placed in, or in the vicinity of, a watercloset; and the ice is probably often obtained from contaminated water. But it is not probably so much attributable to the absorbent properties of water in taking up gases, as to the zeers themselves, which are commonly used until accident destroys them, without being properly cleaned in the meantime, and under such circumstances fouled water and filtered water become synonymous.

"I do not think that it would be difficult to prove the general accuracy of the foregoing sketch by the medical history and statistical records of the country, and by our own experience of it as an army of occupation.

"To remedy the insanitary state of the city and to afford the inhabitants a pure water supply are matters of sanitary engineering on a large scale, and necessarily associated with expense."

"The elements of the problem and the indications for their remedy may be practically said, however, to be circumscribed within very narrow limits: 1st. To send out corps to this climate composed, as far as practicable, of grown and drilled men. 2nd. To disembark them in Egypt at the proper season, that is, not earlier than November. 3rd. To place them in the best practicable sanitary position on arrival.

" If such of the troops as had recently arrived in this country could be *Egypt.*  
" quartered during their first year of service, or during the hot months of the  
" two first years of their service in Egypt, in a cantonment, at Abbassiyeh,  
" for instance, with the remainder at the Citadel and Kasr-el-Nil, the health  
" of the army of occupation would be improved. I name Abbassiyeh, not  
" that I think it superior to Mokattam heights, but in consequence of its  
" being more easy of access for one thing, and of there being no difficulty, as  
" at Mokattam, about the water supply for another.  
" A military cantonment on the plan of an Indian station, and the troops  
" huddled in the most suitable but simplest and cheapest structures, at such a  
" a distance from Cairo as to be removed from the city air and surroundings,  
" strikes me as the most suitable provision for the purpose, and if huts were  
" adopted, I think that those of a design described in Appendix XVI., Army  
" Medical Departmental Report for 1884, will fulfil the requirements, pro-  
" vided that the roofing were made thick (of any cheap non-conducting  
" material), and the verandahs sufficiently broad.  
" But looking to the fact that at Abbassiyeh there are barracks structu-  
" rally excellent, capable of providing ample accommodation, and that with  
" the limited number of men for whom provision would be required, the  
" upper and best rooms exposed to the desert air could be exclusively used ;  
" and on the other hand in view of the expense that would be incurred in  
" erecting a sufficient number of huts on the principle of an Indian canton-  
" ment, I am of opinion that it would be well to try, in the first place, as an  
" experiment, the effect of quartering all newly-arrived troops in the best  
" parts of these existing barracks before doing anything else "

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*Troops on  
Board Ship.*

#### XIV.—ON THE HEALTH OF THE TROOPS ON BOARD SHIP.

The troops embarked during the year, as shown in the returns received in the Army Medical Department, were :—

|                                                           |   |   |        |
|-----------------------------------------------------------|---|---|--------|
| I. Troops proceeding on service abroad                    | - | - | 17,299 |
| II. Troops returning from abroad                          | - | - | 10,108 |
| III. Troops proceeding from one station abroad to another | - | - | 10,161 |
| IV. Invalids returning to England                         | - | - | 2,117  |

##### I.—TROOPS PROCEEDING ON FOREIGN SERVICE.

The total number of warrant officers, non-commissioned officers, and men embarked for foreign service during the year was 17,299, the equivalent annual strength being 1,149. There were 1,200 admissions into hospital and 7 deaths, equal to annual ratios of 1044·4 and 6·09 per 1,000 respectively. Compared with the previous year's results there is a decline of 209·4 in admission rate, and a rise of 2·35 in the death rate; but in comparison with average ratios for the preceding ten years an increase is observed in both the ratios, being 107·9 in the former and 2·68 in the latter.

The admissions and deaths in the different groups and orders of diseases are given in Abstract XXXVI.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—One admission is returned under the head of *eruptive fevers*, this was a case of measles on board H.M.S. "Serapis" on her first voyage to Bombay during the year, when the disease was epidemic among children. *Enteric fever* caused one admission, the man, who came from Belfast, where it was thought he contracted the disease, being on passage to Malta in H.M.S. "Himalaya." *Simple continued fever* gave an admission rate of 11·3 per 1,000, being below the last year's rate by 9·3. In addition to the above mentioned there were two other admissions in the first sub-group of diseases, one for dysentery and one for mumps.

*Malarial fevers* were represented by a single case of ague, and *septic diseases* by two cases of erysipelas.

More than half the total number of admissions were due to *venereal disease*, and the prevalence of these affections is remarked upon by several medical officers in their reports. The admissions numbered in all 6·8, equal to a ratio of 598·8 per 1,000, which is an increase of 28·6 on the corresponding rate in the previous year. Primary syphilis alone caused 180 admissions, or 156·7 per 1,000. Adding to this 131 admissions, or 114·0 per 1,000, for simple venereal ulcer, a total admission rate of 270·7 per 1,000 is obtained for primary venereal sores, which is an increase of 29·1 on the previous year's rate. The admissions for secondary syphilis were 55 in number, or 47·9 per 1,000, as compared with 36·5 in the preceding year. Gonorrhœa caused 322 admissions, equal to 280·2 per 1,000, which shows a decrease of 11·9.

The admissions for rheumatism were 17, of these 4 were cases of rheumatic fever; the admission rate, 14·8 per 1,000, has declined considerably from that returned in the preceding year. The remaining admissions for general diseases comprise one for debility, one for purpura, and several for papilloma, &c.

**LOCAL DISEASES.**—*Diseases of the Nervous System* caused 8 admissions, mostly cases of neuralgia. There were 18 admissions for *diseases of special senses*, 16 being cases of ophthalmic affections, chiefly conjunctivitis, and 2 being cases of aural disorder.

*Diseases of the Respiratory System* caused 52 admissions, equal to 45·2 per 1,000, a decline of 11·0 from the corresponding ratio in the previous year. The most frequent causes of admission were bronchitis and pneumonia, 22 and 25 cases respectively, due to cold, and there were 6 deaths from the latter disease.

*Diseases of the Digestive System* show 84 admissions, or 73·1 per 1,000, *Troops on Board Ship.* which is lower than the corresponding rate in the previous year by 34·6. More than half the admissions were for throat affections, the remainder being principally diarrhoea, dyspepsia, and hæmorrhoids.

*Diseases of the Lymphatic System* gave an admission ratio of 27·0 per 1,000, being lower than that in the previous year by 7·6; while *diseases of the generative system*, nearly all cases of simple venereal ulcer, gave an admission rate of 154·0, an increase of 4·2. *Diseases of the cutaneous system* show 126 admissions, equal to 109·7 per 1,000, a decline of 38·2. Nearly half the admissions were due to itch, ulcers and boils being also prevalent.

*Injuries* were 79 in number, or 68·7 per 1,000. Of these, 3 were general injuries, one being a severe scald received in the engine-room, and the other two cases of sunstroke occurring in the Red Sea in September. The most frequent local injuries were contusions, wounds, and sprains, and there were two cases of fracture. One man committed suicide by drowning; the reason assigned for the act was that he had been recognised as a deserter.

There was very little sickness among officers, but one officer was attacked with scarlet fever, and one was landed at Malta, believed to be suffering from enteric fever. The number of women embarked was 739, and of children 924; among the latter were seven deaths, five from convulsions, one from congestion of the brain, and one from peritonitis.

## II.—TROOPS RETURNING HOME FROM ABROAD.

The number of effective warrant officers, non-commissioned officers, and men who embarked for England during the year was 10,108, and the equivalent annual strength was 752. There were 753 admissions into hospitals and 6 deaths, being in the respective annual ratios of 1001·3 and 7·98 per 1,000. In comparison with the return for the previous year a decline is observed in each of these ratios, being 85·2 in the case of admission and 4·97 in that of mortality; but compared with similar average ratios for the preceding ten years an increase of 172·5 has occurred in the former and a decrease of 5·38 in the latter.

The admissions and deaths in the different groups and orders of diseases are given in Abstract XXXVI.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—*Enteric fever* caused four admissions and 2 deaths, being in the ratios of 5·3 and 2·66 per 1,000; in the preceding year there were no admissions. Two of the cases, one of which was fatal, occurred on board H.M.S. "Tamar" on her voyage from Cape Town, where the disease was believed to have been contracted; the other two cases occurred on board Indian troopships, in one fatal result ensued; it is stated that the man was ailing before embarkation.

*Other continued fevers* caused only 12 admissions, equal to 16·0 per 1,000, which is half the ratio recorded in the previous year.

There were 16 admissions for dysentery, being in the ratio of 21·3 per 1,000, which is below the last year's rate by 11·1.

*Malarial fevers* were the cause of 71 admissions, the ratio of prevalence being 94·4 per 1,000, as compared with 164·5 in the preceding year. All the cases were ague.

*Septic diseases* were represented by a single case of erysipelas, which proved fatal.

The total number of admissions for *venereal disease*, including simple venereal ulcers, was 335, equal to a ratio of 445·5 per 1,000, which is below the corresponding rate in the previous year by 22·2. The admissions for primary syphilis alone numbered 99, or 131·6 per 1,000, as compared with 95, or 123·1 per 1,000, in the preceding year. Adding the admissions for simple venereal ulcer, 38, the ratio for primary venereal sores was 182·2. Secondary syphilis showed 40 admissions, or 53·2 per 1,000, an increase of 5·3 on the rate in the preceding year. Gonorrhœa also shows a marked increase, the admissions, 158 in number, giving a ratio of 210·1 per 1,000, as compared with 171·0.

Among the remaining orders of general diseases which caused admissions are alcoholism, 2 cases; debility, 8; and tubercular disease, 1 case; also

*Troops on Board Ship.*

rheumatism, 22 cases; equal to a rate of 29·2 per 1,000, which is above the previous year's rate by 8·5.

**LOCAL DISEASES.**—*Diseases of the Nervous System* caused 7 admissions, including one case of apoplexy, fatal, one of mania, one of epilepsy, and the rest neuralgia.

*Diseases of Organs of Special Senses* show 12 admissions, or 16·0 per 1,000, five of the cases were conjunctivitis, one iritis, and six inflammation of external meatus.

*Diseases of the Respiratory System* were the cause of 53 admissions, equal to 70·5 per 1,000, as compared with 56·2 in the previous year. Of the cases treated 44 were bronchitis, 5 pneumonia, and 4 pleurisy.

*Diseases of the Digestive System* caused 51 admissions and two deaths. The admission rate was 67·8 per 1,000, an increase of 1·7 on the rate recorded in the previous year. The principal causes of admission were diarrhoea, dyspepsia, and hepatic affections. The deaths were due to abscess of the liver, and perforation of intestine respectively.

*Diseases of the Lymphatic System* show an admission rate of 29·2 per 1,000, and *diseases of the generative system* one of 74·5, both being lower than corresponding rates in the previous year, especially the latter.

*Diseases of the Connective Tissue* show an increased rate, 50·5 per 1,000, but *cutaneous affections*, with a ratio of 42·6, show a considerable decline.

*Injuries* were not frequent, only 36, or 47·9 per 1,000, being recorded. The most numerous were wounds, contusions, or burns, and there were three cases of fracture.

Among 554 officers embarked there were 28 cases of sickness, including 2 cases of enteric fever, in both of which the disease was contracted prior to embarkation; among 660 women embarked there were two deaths, one from debility and one from malarial cachexia; and among 1,522 children there were seven deaths, two from bronchitis, two from convulsions, and one from debility, pneumonia, and dentition respectively.

### III.—TROOPS PROCEEDING FROM ONE STATION ABROAD TO ANOTHER

The number of warrant officers, non-commissioned officers and men who embarked for transit between one station abroad and another was 10,161, the equivalent annual strength being 403. The number of admissions into hospital was 459, being in the annual ratio of 1139·0 per 1,000, which is in excess of that in the preceding year by 291·7, and above the decennial average rate by 252·2. No death occurred.

The admissions in the different groups and orders of diseases are shown in Abstract No. XXXVI.

**GENERAL DISEASES.**—*Diseases dependent on Morbid Poisons.*—There was one mild case of *enteric fever* on board H.M.S. "Serapis," between Bombay and Aden, but the disease was, it is said, contracted before embarkation.

*Simple Continued Fevers* were at the rate of 37·2 per 1,000, which is a decrease of 8·0 from the corresponding rate in the previous year. There was only a single case of *dysentery*. *Malarial fevers* were represented by two cases of *ague*.

The total number of admissions for *venereal diseases*, including simple venereal ulcers, was 196, equal to a ratio of 486·4 per 1,000, which is higher than the corresponding rate in the previous year by 58·5. Primary syphilis caused 51 admissions, or 126·6 per 1,000, and simple venereal ulcers 52, or 129·1 per 1,000, making a total ratio for primary venereal sores of 255·7 per 1,000, as compared with 225·8 in the preceding year. Secondary disease showed only 9 admissions, or 22·3 per 1,000, as against 17·2 in the previous year. Gonorrhoea, with a ratio of 208·4 per 1,000, shows an increase of 23·5.

The remaining admissions for general diseases included 11 for debility, 6 for rheumatism, and 12 for non-malignant growths; the ratio for rheumatism, 14·9 per 1,000, is slightly lower, but those for the other two orders, 27·3 and 29·8 respectively, are higher than the corresponding ratios in the previous year.

**LOCAL DISEASES.**—*Diseases of the Nervous System* caused only 2 admissions, cases of neuralgia; and *ophthalmic and aural affections* 6 admis-

sions. *Respiratory diseases* were the cause of 6 admissions for bronchitis, 4 for pneumonia, and 1 for asthma. *Diseases of the digestive system* show 25 admissions, equal to 62.0 per 1,000, slightly higher than in the previous year; throat affections and diarrhoea were the principal ailments. *Diseases of the generative system* show a ratio of admission of 176.2 per 1,000, principally due to simple venereal ulcer, the ratio is lower than in the previous year. In *diseases of the connective tissues* and of *diseases of the skin* increase is observed in admission rates, which reach 67.0 and 146.4 per 1,000 respectively. Of the last-named order ulcers and boils were the principal causes of admission.

*Troops on  
Board Ship.*

*Injuries.*—Under this head a ratio of frequency of 111.6 per 1,000 is observed, dependent on 45 admissions, 11 were cases of heat apoplexy or sun-stroke, and 9 of them occurred in one voyage from Suez to Cape Town in August, great heat being experienced in the Red Sea. Among 34 admissions for local injury the majority were cases of contusion, wound, or sprain.

The number of women embarked was 594, and of children 852; among the latter were two deaths from diarrhoea.

#### IV.—INVALIDS RETURNING TO ENGLAND.

The number of invalids embarked for England from foreign stations was 2,117, equal to an equivalent annual strength of 146. Ten deaths occurred on the voyage home. The sickness and mortality among these invalids are accounted in the statistical tables of the Command from which the men were invalided.

#### V.—SANITARY CONDITION OF SHIPS.

The sanitary condition of the different vessels and troopships, and the accommodation provided for the troops on the various voyages, was generally reported to be satisfactory.

ABSTRACT No. I.—TABLE showing the AVERAGE STRENGTH,  
CONSTANTLY SICK among the TROOPS serving in the UNITED

| Average Strength in Annual Returns, 101,695.        |                                             | Admissions into Hospital. | Died.              |                           |        | Invalids Discharged the Service. |
|-----------------------------------------------------|---------------------------------------------|---------------------------|--------------------|---------------------------|--------|----------------------------------|
| †Average Strength, including Men detached, 103,140. |                                             |                           | With the Regiment. | Absent from the Regiment. | Total. |                                  |
| Diseases.                                           |                                             |                           |                    |                           |        |                                  |
|                                                     |                                             |                           |                    |                           |        |                                  |
|                                                     |                                             |                           |                    |                           |        |                                  |
| I.—GENERAL DISEASES.                                |                                             |                           |                    |                           |        |                                  |
| GROUP "A."                                          |                                             |                           |                    |                           |        |                                  |
| Sub-Group I.                                        | Small-pox . . . . .                         | 14                        | 1                  | —                         | 1      | —                                |
|                                                     | Other Eruptive Fevers . . . . .             | 720                       | 4                  | —                         | 4      | —                                |
|                                                     | Enteric Fever . . . . .                     | 126                       | 32                 | 2                         | 34     | —                                |
|                                                     | Other Continued Fevers . . . . .            | 450                       | 1                  | —                         | 1      | —                                |
|                                                     | Yellow Fever . . . . .                      | —                         | —                  | —                         | —      | —                                |
|                                                     | Cholera . . . . .                           | —                         | —                  | —                         | —      | —                                |
|                                                     | Dysentery . . . . .                         | 72                        | 4                  | —                         | 4      | 7                                |
|                                                     | Other Diseases . . . . .                    | 168                       | 6                  | —                         | 6      | —                                |
|                                                     | Total . . . . .                             | 1,550                     | 48                 | 2                         | 50     | 7                                |
| Sub-Group II.—Malarial Fevers . . . . .             |                                             | 502                       | 1                  | —                         | 1      | —                                |
| Sub-Group III.—Septic Diseases . . . . .            |                                             | 218                       | 7                  | 1                         | 8      | —                                |
| Sub-Group IV.                                       | Syphilis, Primary . . . . .                 | 6,737                     | —                  | —                         | —      | —                                |
|                                                     | "    Secondary . . . . .                    | 4,095                     | 10                 | 2                         | 12     | 96                               |
|                                                     | Gonorrhoea . . . . .                        | 9,268                     | —                  | —                         | —      | 3                                |
|                                                     | Total . . . . .                             | 20,100                    | 10                 | 2                         | 12     | 99                               |
| Sub-Group V.—Hydrophobia, &c. . . . .               |                                             | —                         | —                  | —                         | —      | —                                |
| GROUP "B."                                          |                                             |                           |                    |                           |        |                                  |
| Sub-Group I.—Parasitic Diseases . . . . .           |                                             | 52                        | 1                  | —                         | 1      | —                                |
| Sub-Group II.                                       | Scurvy . . . . .                            | 12                        | —                  | —                         | —      | —                                |
|                                                     | Alcoholism . . . . .                        | 353                       | 3                  | —                         | 3      | —                                |
| GROUP "C."                                          |                                             |                           |                    |                           |        |                                  |
| Debility, &c. . . . .                               |                                             | 679                       | 1                  | 1                         | 2      | 114                              |
| GROUP "D."                                          |                                             |                           |                    |                           |        |                                  |
| Rheumatism . . . . .                                |                                             | 3,758                     | 4                  | —                         | 4      | 79                               |
| Tubercular Diseases . . . . .                       |                                             | 375                       | 95                 | 11                        | 106    | 170                              |
| Other Diseases . . . . .                            |                                             | 538                       | 5                  | 2                         | 7      | 41                               |
| II.—LOCAL DISEASES.                                 |                                             |                           |                    |                           |        |                                  |
| Diseases of the—                                    |                                             |                           |                    |                           |        |                                  |
| 1.                                                  | Nervous System { Nervous Diseases . . . . . | 785                       | 45                 | 3                         | 48     | 115                              |
|                                                     | { Mental " . . . . .                        | 148                       | 2                  | 1                         | 3      | 105                              |
| 2.                                                  | Eye . . . . .                               | 1,223                     | —                  | —                         | —      | 61                               |
| 3 & 4.                                              | Other Organs of Special Senses . . . . .    | 654                       | 1                  | —                         | 1      | 63                               |
| 5.                                                  | Circulatory System . . . . .                | 1,029                     | 40                 | 2                         | 42     | 322                              |
| 6.                                                  | Respiratory " . . . . .                     | 6,427                     | 126                | 6                         | 132    | 100                              |
| 7.                                                  | Digestive . . . . .                         | 9,536                     | 33                 | 2                         | 35     | 97                               |
| 8.                                                  | Lymphatic and Glandular System . . . . .    | 2,122                     | 1                  | —                         | 1      | 12                               |
| 9.                                                  | Urinary System . . . . .                    | 226                       | 17                 | 2                         | 19     | 24                               |
| 10.                                                 | Generative . . . . .                        | 4,606                     | 1                  | —                         | 1      | 38                               |
| 11.                                                 | Organs of Locomotion . . . . .              | 740                       | 7                  | 1                         | 8      | 90                               |
| 12.                                                 | Connective Tissue . . . . .                 | 2,259                     | 3                  | —                         | 3      | 10                               |
| 13.                                                 | Skin . . . . .                              | 7,633                     | —                  | —                         | —      | 19                               |
| III.—POISONS . . . . .                              |                                             | 16                        | 2                  | —                         | 2      | —                                |
| IV.—INJURIES.                                       |                                             |                           |                    |                           |        |                                  |
| 1.                                                  | General . . . . .                           | 19                        | 40                 | 3                         | 52     | 1                                |
| 2.                                                  | Local . . . . .                             | 9,572                     | 27                 | 2                         | 29     | 74                               |
| 3.                                                  | In Action . . . . .                         | —                         | —                  | —                         | —      | —                                |
| No appreciable disease . . . . .                    |                                             | 214                       | —                  | —                         | —      | —                                |
| Cause unknown (refers to deaths only) . . . . .     |                                             | —                         | —                  | —                         | —      | —                                |
| General Total . . . . .                             |                                             | 75,345                    | 529                | 41                        | 570    | 1,641                            |

\* The average ratios for 10 years will be given in future years. The average ratios for years, 1886 to 1889, in  
† Ratios of deaths and invalids

ADMISSIONS into HOSPITAL, DEATHS, NUMBERS INVALIDED and KINGDOM during the Year 1888, with the Ratios per 1,000 of the Strength.

| Average Number constantly Sick. | Ratio per 1,000. |         |                                  |                  | *Average Ratio per 1,000 from 1886 to 1887. |         |                                  |                  |
|---------------------------------|------------------|---------|----------------------------------|------------------|---------------------------------------------|---------|----------------------------------|------------------|
|                                 | Admissions.      | Deaths. | Invalids Discharged the Service. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids Discharged the Service. | Constantly Sick. |
| 1'30                            | '1               | '01     | —                                | '01              | '1                                          | '01     | —                                | '01              |
| 40'19                           | 7'1              | '04     | —                                | '48              | 6'9                                         | '05     | —                                | '36              |
| 18'89                           | 1'2              | '35     | —                                | '19              | 1'4                                         | '36     | —                                | '23              |
| 14'88                           | 4'4              | '01     | —                                | '15              | 7'9                                         | '04     | —                                | '31              |
| —                               | —                | —       | —                                | —                | —                                           | —       | —                                | —                |
| 9'53                            | '7               | '04     | '07                              | '09              | '9                                          | '04     | '04                              | '09              |
| 5'70                            | 1'7              | '05     | —                                | '06              | 1'7                                         | '01     | —                                | '05              |
| 99'40                           | 15'2             | '48     | '07                              | '98              | 18'9                                        | '51     | '04                              | 1'05             |
| 17'75                           | 4'9              | '01     | —                                | '17              | 5'1                                         | —       | '02                              | '18              |
| 13'31                           | 2'1              | '08     | —                                | '13              | 2'6                                         | '07     | '02                              | '14              |
| 630'53                          | 66'2             | —       | —                                | 6'20             | 81'0                                        | —       | '01                              | 7'21             |
| 389'32                          | 40'3             | '11     | '83                              | 3'93             | 35'2                                        | '04     | '56                              | 3'11             |
| 616'59                          | 91'1             | —       | '03                              | 6'06             | 106'7                                       | —       | '03                              | 6'63             |
| 1646'44                         | 197'6            | '11     | '96                              | 16'19            | 227'9                                       | '04     | '80                              | 17'00            |
| —                               | —                | —       | —                                | —                | —                                           | —       | —                                | —                |
| 1'36                            | '5               | '01     | —                                | '01              | '7                                          | '01     | —                                | '02              |
| '86                             | '1               | —       | —                                | '01              | '1                                          | —       | —                                | '01              |
| 10'76                           | 3'5              | '03     | —                                | '11              | 3'3                                         | '06     | '01                              | '09              |
| 45'13                           | 6'7              | '02     | 1'11                             | '43              | 7'5                                         | '01     | 1'12                             | '54              |
| 238'95                          | 87'0             | '04     | '77                              | 2'35             | 39'4                                        | '03     | '83                              | 2'43             |
| 87'78                           | 5'7              | 1'03    | 1'65                             | '67              | 5'8                                         | 1'14    | 1'63                             | '59              |
| 42'89                           | 5'3              | '07     | '40                              | '42              | 5'4                                         | '14     | '32                              | '36              |
| 50'41                           | 7'7              | '46     | 1'11                             | '50              | 7'7                                         | '41     | 1'37                             | '57              |
| 30'03                           | 1'5              | '03     | 1'02                             | '30              | 1'7                                         | '01     | 1'11                             | '30              |
| 70'74                           | 12'0             | —       | '59                              | '70              | 13'1                                        | —       | '73                              | '78              |
| 36'87                           | 6'4              | '01     | '61                              | '36              | 6'8                                         | —       | '50                              | '37              |
| 89'33                           | 10'1             | '41     | 3'12                             | '88              | 9'4                                         | '45     | 3'15                             | '90              |
| 354'71                          | 63'2             | 1'28    | '97                              | 3'49             | 67'7                                        | 1'48    | 1'09                             | 3'38             |
| 295'80                          | 83'8             | '34     | '94                              | 2'91             | 100'1                                       | '42     | 1'06                             | 3'04             |
| 235'17                          | 20'9             | '01     | '11                              | 2'31             | 20'9                                        | '01     | '05                              | 2'08             |
| 18'35                           | 2'2              | '18     | '23                              | '18              | 2'3                                         | '20     | '17                              | '18              |
| 392'48                          | 45'3             | '01     | '37                              | 2'97             | 52'8                                        | '03     | '27                              | 3'19             |
| 63'83                           | 7'3              | '08     | '87                              | '63              | 6'4                                         | '03     | '53                              | '53              |
| 108'95                          | 22'2             | '03     | '10                              | 1'07             | 23'6                                        | '02     | '11                              | 1'06             |
| 290'51                          | 75'1             | —       | '18                              | 2'86             | 86'1                                        | —       | '21                              | 3'11             |
| '96                             | '2               | '02     | —                                | '01              | '2                                          | '05     | —                                | —                |
| '63                             | '2               | '50     | '01                              | '01              | '2                                          | '37     | '02                              | '02              |
| 390'73                          | 94'1             | '28     | '72                              | 3'84             | 97'3                                        | '37     | '91                              | 4'06             |
| —                               | —                | —       | —                                | —                | —                                           | —       | '01                              | —                |
| 5'89                            | 2'1              | —       | —                                | '06              | 2'8                                         | —       | —                                | '08              |
| —                               | —                | —       | —                                | —                | —                                           | '01     | —                                | —                |
| 4520'11                         | 740'9            | 5'52    | 15'91                            | 44'45            | 813'8                                       | 5'87    | 16'18                            | 46'06            |

the three years, 1886 to 1888, will be given in the Report for 1889; those for the four that for 1890, &c., &c. calculated on this strength.

ABSTRACT A.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS among the TROOPS stationed in ENGLAND during the

| Average Strength, 71,374.                       |                                  | Admissions into Hospital. | Died.                 |        |     | Invalids charged the Service. | Average Number constantly Sick. |
|-------------------------------------------------|----------------------------------|---------------------------|-----------------------|--------|-----|-------------------------------|---------------------------------|
| Diseases.                                       | With the Regiment.               |                           | Absent from Regiment. | Total. |     |                               |                                 |
|                                                 |                                  |                           |                       |        |     |                               |                                 |
| I.—GENERAL DISEASES.                            |                                  |                           |                       |        |     |                               |                                 |
| GROUP "A."                                      |                                  |                           |                       |        |     |                               |                                 |
| Sub-Group I.                                    | Small-pox . . . . .              | 12                        | 1                     | —      | 1   | —                             | 1·17                            |
|                                                 | Other Eruptive Fevers . . . . .  | 577                       | 2                     | —      | 2   | —                             | 30·06                           |
|                                                 | Enteric Fever . . . . .          | 40                        | 14                    | —      | 14  | —                             | 8·50                            |
|                                                 | Other Continued Fevers . . . . . | 220                       | 1                     | —      | 1   | —                             | 7·83                            |
|                                                 | Yellow Fever . . . . .           | —                         | —                     | —      | —   | —                             | —                               |
|                                                 | Cholera . . . . .                | —                         | —                     | —      | —   | —                             | —                               |
|                                                 | Dysentery . . . . .              | 60                        | 4                     | —      | 4   | 5                             | 8·53                            |
|                                                 | Other Diseases . . . . .         | 113                       | 5                     | —      | 5   | —                             | 3·77                            |
| Total . . . . .                                 |                                  | 1,031                     | 27                    | —      | 27  | 5                             | 60·46                           |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 420                       | —                     | —      | —   | —                             | 15·43                           |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | 157                       | 6                     | 1      | 7   | —                             | 10·79                           |
| Sub-Group IV.                                   | { Syphilis, Primary . . . . .    | 5,020                     | —                     | —      | —   | —                             | 471·30                          |
|                                                 | { " Secondary . . . . .          | 3,193                     | 7                     | —      | 7   | 79                            | 327·14                          |
|                                                 | { Gonorrhoea . . . . .           | 6,640                     | —                     | —      | —   | 3                             | 453·95                          |
| Total . . . . .                                 |                                  | 14,853                    | 7                     | —      | 7   | 82                            | 1,253·39                        |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                         | —                     | —      | —   | —                             | —                               |
| GROUP "B."                                      |                                  |                           |                       |        |     |                               |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | 36                        | 1                     | —      | 1   | —                             | 1·05                            |
| Sub-Group II.                                   | { Scurvy . . . . .               | 5                         | —                     | —      | —   | —                             | ·23                             |
|                                                 | { Alcoholism . . . . .           | 264                       | 2                     | —      | 2   | —                             | 8·00                            |
| GROUP "C."                                      |                                  |                           |                       |        |     |                               |                                 |
| Debility, &c. . . . .                           |                                  | 405                       | 1                     | —      | 1   | 86                            | 33·96                           |
| GROUP "D."                                      |                                  |                           |                       |        |     |                               |                                 |
| Rheumatism . . . . .                            |                                  | 2,810                     | 4                     | —      | 4   | 57                            | 180·17                          |
| Tubercular Diseases . . . . .                   |                                  | 275                       | 74                    | 8      | 82  | 123                           | 44·13                           |
| Other Diseases . . . . .                        |                                  | 379                       | 2                     | 1      | 3   | 26                            | 30·99                           |
| II.—LOCAL DISEASES.                             |                                  |                           |                       |        |     |                               |                                 |
| Diseases of the—                                |                                  |                           |                       |        |     |                               |                                 |
| 1. Nervous System { Nervous Diseases . . . . .  |                                  | 577                       | 36                    | 3      | 39  | 80                            | 37·78                           |
| { Mental " . . . . .                            |                                  | 85                        | 1                     | 1      | 2   | 62                            | 19·92                           |
| 2. Eye . . . . .                                |                                  | 884                       | —                     | —      | —   | 47                            | 61·90                           |
| 3 & 4. Other Organs of Special Senses . . . . . |                                  | 483                       | 1                     | —      | 1   | 47                            | 29·36                           |
| 5. Circulatory System . . . . .                 |                                  | 800                       | 29                    | 2      | 31  | 254                           | 70·26                           |
| 6. Respiratory " . . . . .                      |                                  | 4,986                     | 93                    | 5      | 98  | 78                            | 274·33                          |
| 7. Digestive . . . . .                          |                                  | 7,161                     | 29                    | 2      | 31  | 71                            | 226·21                          |
| 8. Lymphatic and Glandular System . . . . .     |                                  | 1,638                     | 1                     | —      | 1   | 11                            | 184·30                          |
| 9. Urinary System . . . . .                     |                                  | 171                       | 9                     | —      | 9   | 19                            | 14·13                           |
| 10. Generative " . . . . .                      |                                  | 3,409                     | —                     | —      | —   | 30                            | 236·56                          |
| 11. Organs of Locomotion . . . . .              |                                  | 526                       | 6                     | —      | 6   | 69                            | 49·44                           |
| 12. Connective Tissue . . . . .                 |                                  | 1,620                     | 3                     | —      | 3   | 7                             | 70·63                           |
| 13. Skin . . . . .                              |                                  | 5,594                     | —                     | —      | —   | 15                            | 211·90                          |
| III.—POISONS . . . . .                          |                                  | 10                        | 1                     | —      | 1   | —                             | ·79                             |
| IV.—INJURIES.                                   |                                  |                           |                       |        |     |                               |                                 |
| 1. General . . . . .                            |                                  | 16                        | 30                    | 3      | 33  | —                             | ·27                             |
| 2. Local . . . . .                              |                                  | 6,061                     | 23                    | 2      | 25  | 54                            | 277·73                          |
| 3. In Action . . . . .                          |                                  | 167                       | —                     | —      | —   | —                             | 4·50                            |
| No appreciable disease . . . . .                |                                  | —                         | —                     | —      | —   | —                             | —                               |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                         | —                     | —      | —   | —                             | —                               |
| General Total . . . . .                         |                                  | 55,518                    | 386                   | 28     | 414 | 1,223                         | 3,415·70                        |

\* The average ratios for 10 years will be given in future years. The average ratios for 1886 to 1890, in

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK  
Year 1888, with the Ratios per 1,000 of the Strength.

| Ratio per 1,000. |         |                                  |                  | * Average Ratio per 1,000 from 1886 to 1887. |         |                                  |                  |
|------------------|---------|----------------------------------|------------------|----------------------------------------------|---------|----------------------------------|------------------|
| Admissions.      | Deaths. | Invalids Discharged the Service. | Constantly Sick. | Admissions.                                  | Deaths. | Invalids Discharged the Service. | Constantly Sick. |
|                  |         |                                  |                  |                                              |         |                                  |                  |
| .3               | .01     | —                                | .02              | .1                                           | .01     | —                                | .01              |
| 8.0              | .03     | —                                | .55              | 8.1                                          | .07     | —                                | .42              |
| .7               | .20     | —                                | .12              | 1.1                                          | .22     | —                                | .18              |
| 3.1              | .01     | —                                | .11              | 6.2                                          | .06     | —                                | .27              |
| —                | —       | —                                | —                | —                                            | —       | —                                | —                |
| .8               | .06     | .07                              | .12              | 1.2                                          | .05     | .03                              | .12              |
| 1.6              | .07     | —                                | .05              | 1.5                                          | .01     | —                                | .05              |
| 14.4             | .32     | .07                              | .97              | 12.2                                         | .42     | .03                              | 1.05             |
| 5.9              | —       | —                                | .21              | 6.0                                          | —       | .02                              | .22              |
| 2.2              | .10     | —                                | .15              | 2.8                                          | .09     | .01                              | .15              |
| 69.9             | —       | —                                | 6.56             | 85.8                                         | —       | .01                              | 7.72             |
| 44.4             | .10     | 1.10                             | 4.55             | 40.7                                         | .04     | .52                              | 3.32             |
| 92.4             | —       | .04                              | 6.32             | 110.3                                        | —       | .03                              | 6.93             |
| 206.7            | .10     | 1.14                             | 17.42            | 236.8                                        | .04     | .60                              | 17.97            |
| —                | —       | —                                | —                | —                                            | —       | —                                | —                |
| .5               | .01     | —                                | .01              | .7                                           | .01     | —                                | .62              |
| .1               | —       | —                                | —                | .1                                           | —       | —                                | .01              |
| 3.7              | .03     | —                                | .11              | 3.3                                          | .07     | .01                              | .10              |
| 6.9              | .01     | 1.20                             | .47              | 8.1                                          | .01     | 1.17                             | .59              |
| 39.1             | .06     | .79                              | 2.51             | 40.6                                         | .04     | .94                              | 2.55             |
| 3.8              | 1.14    | 1.72                             | .61              | 3.9                                          | 1.19    | 1.76                             | .69              |
| 5.2              | .04     | .56                              | .42              | 5.5                                          | .17     | .42                              | .28              |
| 8.0              | .54     | 1.11                             | .52              | 8.0                                          | .44     | 1.48                             | .59              |
| 1.2              | .03     | .86                              | .28              | 1.5                                          | —       | 1.18                             | .22              |
| 12.3             | —       | .65                              | .72              | 12.3                                         | —       | .85                              | .81              |
| 6.8              | .01     | .65                              | .41              | 6.9                                          | —       | .48                              | .58              |
| 11.1             | .42     | 3.54                             | .98              | 10.3                                         | .42     | 3.50                             | .97              |
| 69.2             | 1.26    | 1.09                             | 3.22             | 70.9                                         | 1.55    | 1.17                             | 3.49             |
| 99.6             | .42     | .99                              | 3.15             | 103.7                                        | .42     | 1.16                             | 3.21             |
| 22.8             | .01     | .15                              | 2.56             | 20.9                                         | .01     | .06                              | 2.10             |
| 2.4              | .13     | .22                              | .20              | 2.4                                          | .21     | .17                              | .18              |
| 47.4             | —       | .42                              | 3.29             | 55.0                                         | .02     | .32                              | 3.41             |
| 7.2              | .08     | .92                              | .69              | 6.4                                          | .04     | .90                              | .51              |
| 22.6             | .04     | .10                              | 1.11             | 24.1                                         | .02     | .12                              | 1.10             |
| 77.8             | —       | .20                              | 2.95             | 88.6                                         | —       | .20                              | 3.16             |
| .1               | .01     | —                                | .01              | .2                                           | .05     | —                                | —                |
| .2               | .46     | —                                | —                | .2                                           | .37     | —                                | .01              |
| 92.7             | .25     | .75                              | 3.86             | 96.6                                         | .36     | 1.00                             | 4.11             |
| 2.2              | —       | —                                | .06              | 2.9                                          | —       | —                                | .09              |
| —                | —       | —                                | —                | —                                            | .01     | —                                | —                |
| 772.4            | 5.76    | 17.01                            | 47.52            | 837.9                                        | 6.10    | 17.56                            | 48.04            |

the three years, 1886 to 1888, will be given in the Report for 1889; those for the four years, that for 1890, &c., &c.



ABSTRACT B.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS among the TROOPS stationed in SCOTLAND during the

| Average Strength, 3,572.                        |                                  | Admissions into Hospital. | Died.              |                       |        | Invalids charged the Service. | Average Number constantly Sick. |
|-------------------------------------------------|----------------------------------|---------------------------|--------------------|-----------------------|--------|-------------------------------|---------------------------------|
| Diseases.                                       |                                  |                           | With the Regiment. | Absent from Regiment. | Total. |                               |                                 |
| I.—GENERAL DISEASES.                            |                                  |                           |                    |                       |        |                               |                                 |
| GROUP "A."                                      |                                  |                           |                    |                       |        |                               |                                 |
| Sub-Group I.                                    | Small-pox . . . . .              | —                         | —                  | —                     | —      | —                             | —                               |
|                                                 | Other Eruptive Fevers . . . . .  | 28                        | —                  | —                     | —      | —                             | 1'66                            |
|                                                 | Enteric Fever . . . . .          | 2                         | 1                  | —                     | 1      | —                             | '05                             |
|                                                 | Other Continued Fevers . . . . . | 24                        | —                  | —                     | —      | —                             | '78                             |
|                                                 | Yellow Fever . . . . .           | —                         | —                  | —                     | —      | —                             | —                               |
|                                                 | Cholera . . . . .                | 2                         | —                  | —                     | —      | —                             | '13                             |
|                                                 | Dysentery . . . . .              | 19                        | 1                  | —                     | 1      | —                             | '59                             |
| Other Diseases . . . . .                        |                                  | —                         | —                  | —                     | —      | —                             | —                               |
| Total . . . . .                                 |                                  | 75                        | 2                  | —                     | 2      | —                             | 3'21                            |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 8                         | —                  | —                     | —      | —                             | '17                             |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | 13                        | —                  | —                     | —      | —                             | '63                             |
| Sub-Group IV.                                   | Syphilis, Primary . . . . .      | 74                        | —                  | —                     | —      | —                             | 5'46                            |
|                                                 | " Secondary . . . . .            | 166                       | —                  | 1                     | 1      | 3                             | 12'87                           |
|                                                 | Gonorrhoea . . . . .             | 260                       | —                  | —                     | —      | —                             | 11'14                           |
| Total . . . . .                                 |                                  | 500                       | —                  | 1                     | 1      | 3                             | 29'47                           |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                         | —                  | —                     | —      | —                             | —                               |
| GROUP "B."                                      |                                  |                           |                    |                       |        |                               |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | 1                         | —                  | —                     | —      | —                             | '02                             |
| Sub-Group II.                                   | Scurvy . . . . .                 | —                         | —                  | —                     | —      | —                             | —                               |
|                                                 | Alcoholism . . . . .             | 22                        | —                  | —                     | —      | —                             | '41                             |
| GROUP "C."                                      |                                  |                           |                    |                       |        |                               |                                 |
| Debility, &c. . . . .                           |                                  | 15                        | —                  | —                     | —      | 5                             | 1'20                            |
| GROUP "D."                                      |                                  |                           |                    |                       |        |                               |                                 |
| Rheumatism . . . . .                            |                                  | 105                       | —                  | —                     | —      | 6                             | 6'86                            |
| Tubercular Diseases . . . . .                   |                                  | 15                        | 2                  | —                     | 2      | 8                             | 1'85                            |
| Other Diseases . . . . .                        |                                  | 17                        | —                  | —                     | —      | 2                             | '86                             |
| II.—LOCAL DISEASES.                             |                                  |                           |                    |                       |        |                               |                                 |
| Diseases of the—                                |                                  |                           |                    |                       |        |                               |                                 |
| 1. Nervous System { Nervous Diseases . . . . .  |                                  | 23                        | —                  | —                     | —      | 5                             | 1'64                            |
| { Mental " . . . . .                            |                                  | 9                         | —                  | —                     | —      | 5                             | 1'42                            |
| 2. Eye . . . . .                                |                                  | 50                        | —                  | —                     | —      | 6                             | 2'67                            |
| 3 & 4. Other Organs of Special Senses . . . . . |                                  | 19                        | —                  | —                     | —      | 1                             | '86                             |
| 5. Circulatory System . . . . .                 |                                  | 34                        | 1                  | —                     | 1      | 11                            | 3'33                            |
| 6. Respiratory " . . . . .                      |                                  | 218                       | 7                  | 1                     | 8      | 8                             | 12'86                           |
| 7. Digestive . . . . .                          |                                  | 293                       | 1                  | —                     | 1      | 10                            | 8'22                            |
| 8. Lymphatic and Glandular System . . . . .     |                                  | 37                        | —                  | —                     | —      | —                             | 2'30                            |
| 9. Urinary System . . . . .                     |                                  | 9                         | 3                  | 1                     | 4      | —                             | '73                             |
| 10. Generative " . . . . .                      |                                  | 159                       | —                  | —                     | —      | 1                             | 8'87                            |
| 11. Organs of Locomotion . . . . .              |                                  | 32                        | —                  | —                     | —      | 5                             | 1'87                            |
| 12. Connective Tissue . . . . .                 |                                  | 70                        | —                  | —                     | —      | 1                             | 3'10                            |
| 13. Skin . . . . .                              |                                  | 298                       | —                  | —                     | —      | —                             | 10'67                           |
| III.—POISONS . . . . .                          |                                  | —                         | —                  | —                     | —      | —                             | —                               |
| IV.—INJURIES.                                   |                                  |                           |                    |                       |        |                               |                                 |
| 1. General . . . . .                            |                                  | 2                         | 3                  | —                     | 3      | 1                             | '11                             |
| 2. Local . . . . .                              |                                  | 337                       | 3                  | —                     | 3      | 2                             | 10'58                           |
| 3. In Action . . . . .                          |                                  | 10                        | —                  | —                     | —      | —                             | '53                             |
| No appreciable disease . . . . .                |                                  | —                         | —                  | —                     | —      | —                             | —                               |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                         | —                  | —                     | —      | —                             | —                               |
| General Total . . . . .                         |                                  | 3,371                     | 22                 | 3                     | 25     | 80                            | 114'03                          |

\* The average ratios for 10 years will be given in future years. The average ratios years 1886 to 1889 in

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK  
Year 1888, with the Ratios per 1,000 of the Strength.

| Ratio per 1,000. |         |                                                |                     | *Average Ratio per 1,000 from 1886 to 1887. |         |                                                |                     |
|------------------|---------|------------------------------------------------|---------------------|---------------------------------------------|---------|------------------------------------------------|---------------------|
| Admis-<br>sions. | Deaths. | Invalids<br>Dis-<br>charged<br>the<br>Service. | Constantly<br>Sick. | Admis-<br>sions.                            | Deaths. | Invalids<br>Dis-<br>charged<br>the<br>Service. | Constantly<br>Sick. |
| —                | —       | —                                              | —                   | —                                           | —       | —                                              | —                   |
| 7·8              | —       | —                                              | ·46                 | 3·7                                         | —       | —                                              | ·17                 |
| ·6               | ·23     | —                                              | ·01                 | 1·4                                         | ·14     | —                                              | ·24                 |
| 6·7              | —       | —                                              | ·22                 | 9·1                                         | —       | —                                              | ·24                 |
| —                | —       | —                                              | —                   | —                                           | —       | —                                              | —                   |
| ·6               | —       | —                                              | ·04                 | ·1                                          | —       | ·14                                            | ·01                 |
| 8·3              | ·28     | —                                              | ·17                 | 5·2                                         | —       | —                                              | ·12                 |
| 21·0             | ·66     | —                                              | ·90                 | 19·5                                        | ·14     | ·14                                            | ·78                 |
| 2·2              | —       | —                                              | ·05                 | 2·6                                         | —       | —                                              | ·07                 |
| 3·6              | —       | —                                              | ·17                 | 3·3                                         | ·14     | —                                              | ·19                 |
| 20·7             | —       | —                                              | 1·53                | 47·1                                        | —       | —                                              | 3·81                |
| 46·5             | ·28     | ·84                                            | 3·60                | 25·4                                        | —       | ·41                                            | 1·75                |
| 73·8             | —       | —                                              | 3·12                | 86·2                                        | —       | —                                              | 4·23                |
| 140·0            | ·28     | ·84                                            | 8·25                | 158·7                                       | —       | ·41                                            | 9·79                |
| —                | —       | —                                              | —                   | —                                           | —       | —                                              | —                   |
| ·3               | —       | —                                              | ·01                 | ·4                                          | —       | —                                              | ·01                 |
| —                | —       | —                                              | —                   | ·3                                          | —       | —                                              | ·01                 |
| 6·2              | —       | —                                              | ·11                 | 3·6                                         | —       | —                                              | ·09                 |
| 4·2              | —       | 1·40                                           | ·34                 | 3·2                                         | —       | ·53                                            | ·33                 |
| 29·4             | —       | 1·68                                           | 1·92                | 32·2                                        | —       | ·96                                            | 1·93                |
| 4·2              | ·56     | 2·24                                           | ·52                 | 2·6                                         | ·96     | ·69                                            | ·86                 |
| 4·8              | —       | ·56                                            | ·24                 | 3·3                                         | ·41     | —                                              | ·11                 |
| 6·4              | —       | 1·40                                           | ·46                 | 5·5                                         | ·37     | ·55                                            | ·46                 |
| 2·5              | —       | 1·40                                           | ·40                 | 2·5                                         | —       | ·41                                            | ·31                 |
| 14·0             | —       | 1·68                                           | ·75                 | 9·1                                         | —       | ·14                                            | ·41                 |
| 5·3              | —       | ·28                                            | ·24                 | 5·8                                         | —       | ·27                                            | ·27                 |
| 9·5              | ·28     | 3·08                                           | ·93                 | 7·4                                         | ·41     | 2·75                                           | ·77                 |
| 61·0             | 2·24    | 2·24                                           | 3·60                | 60·7                                        | 1·79    | 1·79                                           | 3·46                |
| 82·0             | ·28     | 2·80                                           | 2·30                | 85·9                                        | ·41     | 1·52                                           | 2·38                |
| 10·4             | —       | —                                              | ·64                 | 11·7                                        | —       | —                                              | ·84                 |
| 2·5              | 1·12    | —                                              | ·20                 | 2·5                                         | ·14     | ·14                                            | ·18                 |
| 44·5             | —       | ·28                                            | 2·48                | 46·2                                        | ·14     | ·27                                            | 2·49                |
| 9·0              | —       | 1·40                                           | ·52                 | 5·4                                         | —       | ·27                                            | ·46                 |
| 19·6             | —       | ·28                                            | ·87                 | 19·4                                        | —       | —                                              | ·86                 |
| 83·4             | —       | —                                              | 2·99                | 86·3                                        | —       | ·41                                            | 2·73                |
| —                | —       | —                                              | —                   | ·4                                          | ·14     | —                                              | —                   |
| ·6               | ·84     | ·28                                            | ·03                 | ·7                                          | ·41     | ·14                                            | ·09                 |
| 94·3             | ·84     | ·56                                            | 2·91                | 103·2                                       | ·41     | 1·37                                           | 3·80                |
| —                | —       | —                                              | —                   | —                                           | —       | —                                              | —                   |
| 2·8              | —       | —                                              | ·09                 | 3·0                                         | —       | —                                              | ·07                 |
| —                | —       | —                                              | —                   | —                                           | —       | —                                              | —                   |
| 663·7            | 7·00    | 22·40                                          | 31·92               | 685·6                                       | 5·7     | 12·78                                          | 33·37               |

for the three years 1886 to 1888 will be given in the Report for 1889; those for the four  
that for 1890, &c., &c.

**ABSTRACT C.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS among the TROOPS stationed in IRELAND during the**

| Average Strength, 26,249.             |                                       |          |   |   | Admissions into Hospital. | Died.              |                       |        | Dis- Invalids charged the Ser- vice. | Average Number constantly Sick. |
|---------------------------------------|---------------------------------------|----------|---|---|---------------------------|--------------------|-----------------------|--------|--------------------------------------|---------------------------------|
| Diseases.                             |                                       |          |   |   |                           | With the Regiment. | Absent from Regiment. | Total. |                                      |                                 |
|                                       |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| I.—GENERAL DISEASES.                  |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| GROUP "A."                            |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| Sub-Group I.                          | Small-pox                             | -        | - | - | 2                         | —                  | —                     | —      | —                                    | ·13                             |
|                                       | Other Eruptive Fevers                 | -        | - | - | 115                       | 2                  | —                     | 2      | —                                    | 7·87                            |
|                                       | Enteric Fever                         | -        | - | - | 75                        | 17                 | 2                     | 19     | —                                    | 10·34                           |
|                                       | Other Continued Fevers                | -        | - | - | 208                       | —                  | —                     | —      | —                                    | 6·27                            |
|                                       | Yellow Fever                          | -        | - | - | —                         | —                  | —                     | —      | —                                    | —                               |
|                                       | Cholera                               | -        | - | - | —                         | —                  | —                     | —      | —                                    | —                               |
|                                       | Dysentery                             | -        | - | - | 10                        | —                  | —                     | —      | 2                                    | ·87                             |
|                                       | Other Diseases                        | -        | - | - | 36                        | —                  | —                     | —      | —                                    | 1·34                            |
| Total                                 |                                       |          |   |   | 444                       | 19                 | 2                     | 21     | 2                                    | 26·82                           |
| Sub-Group II.—Malarial Fevers         |                                       |          |   |   | 74                        | 1                  | —                     | 1      | —                                    | 2·15                            |
| Sub-Group III.—Septic Diseases        |                                       |          |   |   | 48                        | 1                  | —                     | 1      | —                                    | 1·90                            |
| Sub-Group IV.                         | Syphilis, Primary                     | -        | - | - | 1,643                     | —                  | —                     | —      | —                                    | 153·77                          |
|                                       | " Secondary                           | -        | - | - | 736                       | 3                  | 1                     | 4      | 14                                   | 59·31                           |
|                                       | Gonorrhoea                            | -        | - | - | 2,368                     | —                  | —                     | —      | —                                    | 151·50                          |
| Total                                 |                                       |          |   |   | 4,747                     | 3                  | 1                     | 4      | 14                                   | 364·58                          |
| Sub-Group V.—Hydrophobia, &c.         |                                       |          |   |   | —                         | —                  | —                     | —      | —                                    | —                               |
| * GROUP "B."                          |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| Sub-Group I.—Parasitic Diseases       |                                       |          |   |   | 15                        | —                  | —                     | —      | —                                    | ·29                             |
| Sub-Group II.                         | Scurvy                                | -        | - | - | 7                         | —                  | —                     | —      | —                                    | ·63                             |
|                                       | Alcoholism                            | -        | - | - | 67                        | 1                  | —                     | 1      | —                                    | 2·26                            |
| GROUP "C."                            |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| Debility, &c.                         |                                       |          |   |   | 169                       | —                  | 1                     | 1      | 23                                   | 9·97                            |
| GROUP "D."                            |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| Rheumatism                            |                                       |          |   |   | 843                       | —                  | —                     | —      | 16                                   | 51·92                           |
| Tubercular Diseases                   |                                       |          |   |   | 85                        | 19                 | 3                     | 22     | 39                                   | 11·80                           |
| Other Diseases                        |                                       |          |   |   | 142                       | 3                  | 1                     | 4      | 13                                   | 11·04                           |
| II.—LOCAL DISEASES.                   |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| Diseases of the—                      |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| 1. Nervous System                     | { Nervous Diseases                    | -        | - | - | 185                       | 9                  | —                     | 9      | 30                                   | 10·99                           |
|                                       |                                       | { Mental | - | - | -                         | 54                 | 1                     | —      | 1                                    | 38                              |
|                                       | 2. Eye                                | -        | - | - | 289                       | —                  | —                     | —      | 8                                    | 16·17                           |
|                                       | 3 & 4. Other Organs of Special Senses | -        | - | - | 147                       | —                  | —                     | —      | 15                                   | 6·65                            |
|                                       | 5. Circulatory System                 | -        | - | - | 195                       | 10                 | —                     | 10     | 57                                   | 15·74                           |
|                                       | 6. Respiratory                        | -        | - | - | 1,223                     | 26                 | —                     | 26     | 14                                   | 67·52                           |
|                                       | 7. Digestive                          | -        | - | - | 2,081                     | 3                  | —                     | 3      | 16                                   | 61·37                           |
|                                       | 8. Lymphatic and Glandular System     | -        | - | - | 447                       | —                  | —                     | —      | 1                                    | 48·57                           |
|                                       | 9. Urinary System                     | -        | - | - | 46                        | 5                  | 1                     | 6      | 5                                    | 3·49                            |
|                                       | 10. Generative                        | -        | - | - | 1,038                     | 1                  | —                     | 1      | 7                                    | 57·05                           |
|                                       | 11. Organs of Locomotion              | -        | - | - | 182                       | 1                  | 1                     | 2      | 16                                   | 12·52                           |
|                                       | 12. Connective Tissue                 | -        | - | - | 569                       | —                  | —                     | —      | 2                                    | 26·22                           |
|                                       | 13. Skin                              | -        | - | - | 1,741                     | —                  | —                     | —      | 4                                    | 67·94                           |
| III.—POISONS                          |                                       |          |   |   | 6                         | 1                  | —                     | 1      | —                                    | ·17                             |
| IV.—INJURIES.                         |                                       |          |   |   |                           |                    |                       |        |                                      |                                 |
| 1. General                            |                                       |          |   |   | 1                         | 16                 | —                     | 16     | —                                    | ·25                             |
| 2. Local                              |                                       |          |   |   | 2,574                     | 1                  | —                     | 1      | 18                                   | 102·62                          |
| 3. In Action                          |                                       |          |   |   | —                         | —                  | —                     | —      | —                                    | —                               |
| No appreciable disease                |                                       |          |   |   | 37                        | —                  | —                     | —      | —                                    | 1·06                            |
| Cause unknown (refers to deaths only) |                                       |          |   |   | —                         | —                  | —                     | —      | —                                    | —                               |
| General Total                         |                                       |          |   |   | 17,456                    | 121                | 10                    | 131    | 338                                  | 990·38                          |

\* The average ratios for 10 years will be given in future years. The average ratios for 1886 to 1890, in



ABSTRACT D.—TABLE showing the AVERAGE STRENGTH, SICKNESS, UNITED KINGDOM in 1888, with

| Average Strength.                               |                                                 | Officers, 3,863.    |         |                   |         |
|-------------------------------------------------|-------------------------------------------------|---------------------|---------|-------------------|---------|
| Diseases.                                       |                                                 | Attacks of Illness. | Deaths. | Ratios per 1,000. |         |
|                                                 |                                                 |                     |         | Attacks.          | Deaths. |
| I.—GENERAL DISEASES.                            |                                                 |                     |         |                   |         |
| GROUP "A."                                      |                                                 |                     |         |                   |         |
| Sub-Group I.                                    | { Small-pox . . . . .                           | —                   | —       | —                 | —       |
|                                                 | { Other Eruptive Fevers . . . . .               | 23                  | —       | 5.9               | —       |
|                                                 | { Enteric Fever . . . . .                       | 10                  | 3       | 2.6               | .77     |
|                                                 | { Other Continued Fevers . . . . .              | 46                  | 1       | 11.9              | .26     |
|                                                 | { Yellow Fever . . . . .                        | —                   | —       | —                 | —       |
|                                                 | { Cholera . . . . .                             | —                   | —       | —                 | —       |
|                                                 | { Dysentery . . . . .                           | 7                   | —       | 1.8               | —       |
|                                                 | { Other Diseases . . . . .                      | 14                  | —       | 3.6               | —       |
|                                                 | Total . . . . .                                 | 100                 | 4       | 25.8              | 1.03    |
| Sub-Group II.—Malarial Fevers . . . . .         |                                                 | 41                  | —       | 10.6              | —       |
| Sub-Group III.—Septic Diseases . . . . .        |                                                 | 4                   | —       | 1.0               | —       |
| Sub-Group IV.                                   | { Syphilis, Primary . . . . .                   | 11                  | —       | 2.8               | —       |
|                                                 | { " Secondary . . . . .                         | 2                   | —       | .5                | —       |
|                                                 | { Gonorrhoea . . . . .                          | 30                  | —       | 7.8               | —       |
|                                                 | Total . . . . .                                 | 43                  | —       | 11.1              | —       |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                                 | —                   | —       | —                 | —       |
| GROUP "B."                                      |                                                 |                     |         |                   |         |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                                 | —                   | —       | —                 | —       |
| Sub-Group II.                                   | { Scurvy . . . . .                              | —                   | —       | —                 | —       |
|                                                 | { Alcoholism . . . . .                          | —                   | —       | —                 | —       |
| GROUP "C."                                      |                                                 |                     |         |                   |         |
| Debility, &c. . . . .                           |                                                 | 27                  | 1       | 7.0               | .26     |
| GROUP "D."                                      |                                                 |                     |         |                   |         |
| Rheumatism . . . . .                            |                                                 | 86                  | 1       | 22.2              | .26     |
| Tubercular Diseases . . . . .                   |                                                 | —                   | —       | —                 | —       |
| Other Diseases . . . . .                        |                                                 | 4                   | —       | 1.0               | —       |
| II.—LOCAL DISEASES.                             |                                                 |                     |         |                   |         |
| Diseases of the—                                |                                                 |                     |         |                   |         |
| 1. Nervous System {                             | Nervous Diseases . . . . .                      | 39                  | 1       | 10.1              | .26     |
|                                                 | Mental " . . . . .                              | 6                   | —       | 1.6               | —       |
|                                                 | 2. Eye . . . . .                                | 19                  | —       | 4.9               | —       |
|                                                 | 3 & 4. Other Organs of Special Senses . . . . . | 7                   | —       | 1.8               | —       |
|                                                 | 5. Circulatory System . . . . .                 | 7                   | 2       | 1.8               | .52     |
|                                                 | 6. Respiratory " . . . . .                      | 134                 | 3       | 34.7              | .77     |
|                                                 | 7. Digestive " . . . . .                        | 231                 | 1       | 59.7              | .26     |
|                                                 | 8. Lymphatic and Glandular System . . . . .     | 25                  | —       | 6.5               | —       |
|                                                 | 9. Urinary System . . . . .                     | 21                  | 1       | 5.4               | .26     |
|                                                 | 10. Generative " . . . . .                      | 15                  | —       | 3.9               | —       |
|                                                 | 11. Organs of Locomotion . . . . .              | 39                  | —       | 10.1              | —       |
|                                                 | 12. Connective Tissue . . . . .                 | 45                  | 1       | 11.6              | .26     |
|                                                 | 13. Skin . . . . .                              | 53                  | —       | 13.7              | —       |
| III.—POISONS . . . . .                          |                                                 |                     |         |                   |         |
| IV.—INJURIES.                                   |                                                 |                     |         |                   |         |
| 1. General . . . . .                            |                                                 | 2                   | 2       | .5                | .52     |
| 2. Local . . . . .                              |                                                 | 241                 | 1       | 62.3              | .26     |
| 3. In Action . . . . .                          |                                                 | —                   | —       | —                 | —       |
| No appreciable disease . . . . .                |                                                 | —                   | —       | —                 | —       |
| Cause unknown (refers to deaths only) . . . . . |                                                 | —                   | —       | —                 | —       |
| General Total . . . . .                         |                                                 | 1,180               | 18      | 307.3             | 4.65    |

and MORTALITY among the OFFICERS, WOMEN, and CHILDREN in the  
the Ratios per 1,000 of the Strength.

| Women, 10,924.            |         |                   |         | Children, 21,215.         |         |                   |         |
|---------------------------|---------|-------------------|---------|---------------------------|---------|-------------------|---------|
| Attacks<br>of<br>Illness. | Deaths. | Ratios per 1,000. |         | Attacks<br>of<br>Illness. | Deaths. | Ratios per 1,000. |         |
|                           |         | Attacks.          | Deaths. |                           |         | Attacks.          | Deaths. |
| 1                         | —       | .1                | —       | 1                         | 1       | —                 | .05     |
| 31                        | —       | 2.8               | —       | 1,425                     | 27      | 67.2              | 1.27    |
| 9                         | 3       | .8                | .28     | 15                        | —       | .7                | —       |
| 32                        | —       | 2.9               | —       | 145                       | —       | 6.8               | —       |
| —                         | —       | —                 | —       | —                         | —       | —                 | —       |
| 13                        | —       | 1.2               | —       | 15                        | 1       | .7                | .05     |
| 21                        | —       | 1.9               | —       | 712                       | 23      | 33.6              | 1.08    |
| 107                       | 3       | 9.7               | .28     | 2,313                     | 52      | 109.0             | 2.45    |
| 47                        | —       | 4.3               | —       | 28                        | —       | 1.3               | —       |
| 31                        | 2       | 2.8               | .18     | 14                        | 1       | .7                | .05     |
| 2                         | —       | .2                | —       | —                         | —       | —                 | —       |
| 29                        | 1       | 2.6               | .09     | 34                        | 4       | 1.6               | .19     |
| —                         | —       | —                 | —       | —                         | —       | —                 | —       |
| 31                        | 1       | 2.8               | .09     | 34                        | 4       | 1.6               | .19     |
| —                         | —       | —                 | —       | —                         | —       | —                 | —       |
| 10                        | —       | .9                | —       | 115                       | 1       | 5.4               | .05     |
| —                         | —       | —                 | —       | 1                         | —       | —                 | —       |
| 4                         | —       | .4                | —       | —                         | —       | —                 | —       |
| 716                       | —       | 65.6              | —       | 545                       | 50      | 25.7              | 2.36    |
| 209                       | —       | 19.1              | —       | 31                        | —       | 1.5               | —       |
| 77                        | 15      | 7.1               | 1.37    | 61                        | 28      | 2.9               | 1.32    |
| 77                        | 5       | 7.1               | .46     | 97                        | 2       | 4.6               | .09     |
| 208                       | 4       | 19.0              | .36     | 268                       | 84      | 12.4              | 3.96    |
| 18                        | 1       | 1.6               | .09     | 1                         | —       | —                 | —       |
| 23                        | —       | 2.1               | —       | 185                       | —       | 8.7               | —       |
| 6                         | —       | .5                | —       | 45                        | —       | 2.1               | —       |
| 63                        | 1       | 5.8               | .09     | 13                        | 1       | .6                | .05     |
| 641                       | 16      | 58.7              | 1.47    | 2,888                     | 152     | 136.1             | 7.16    |
| 850                       | 6       | 77.8              | .55     | 1,396                     | 43      | 65.3              | 2.02    |
| 14                        | 1       | 1.3               | .09     | 65                        | 2       | 3.1               | .09     |
| 21                        | —       | 1.9               | —       | 22                        | 6       | 1.1               | .28     |
| 458                       | 7       | 44.7              | .64     | 12                        | —       | .6                | —       |
| 24                        | —       | 2.2               | —       | 28                        | —       | 1.3               | —       |
| 99                        | —       | 9.1               | —       | 145                       | 1       | 6.8               | .05     |
| 107                       | —       | 9.8               | —       | 598                       | —       | 28.7              | —       |
| 4                         | —       | .4                | —       | 1                         | —       | —                 | —       |
| 2                         | 3       | .2                | .23     | 3                         | 3       | .1                | .14     |
| 83                        | —       | 7.6               | —       | 424                       | 7       | 20.0              | .33     |
| —                         | —       | —                 | —       | —                         | —       | —                 | —       |
| —                         | —       | —                 | —       | —                         | —       | —                 | —       |
| —                         | —       | —                 | —       | —                         | —       | —                 | —       |
| 3,900                     | 65      | 362.5             | 5.95    | 9,286                     | 437     | 437.7             | 20.59   |



into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                     |                              |                  | Average Ratio per 1,000 from 1886 to 1887. |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|--------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| .2               | —       | —                   | —                            | .01              | —                                          | —       | —                   | —                            | —                |
| .2               | —       | —                   | —                            | .03              | .7                                         | —       | —                   | —                            | .94              |
| 15.4             | 1.06    | 5.91                | —                            | 2.92             | 21.6                                       | 3.92    | 7.17                | —                            | 3.45             |
| 27.7             | —       | 4.23                | —                            | 4.38             | 31.2                                       | —       | 5.27                | —                            | 3.97             |
| —                | —       | —                   | —                            | —                | —                                          | —       | —                   | —                            | —                |
| —                | —       | —                   | —                            | —                | —                                          | —       | —                   | —                            | .01              |
| —                | —       | —                   | —                            | —                | —                                          | —       | —                   | —                            | —                |
| 48.5             | 1.06    | 10.14               | —                            | 7.34             | 53.5                                       | 3.92    | 12.44               | —                            | 7.47             |
| —                | —       | —                   | —                            | —                | 2.8                                        | —       | .11                 | .11                          | .07              |
| —                | —       | —                   | —                            | —                | 1.1                                        | .11     | —                   | —                            | .05              |
| 19.2             | —       | —                   | —                            | 2.63             | 39.3                                       | —       | —                   | —                            | 3.60             |
| 35.5             | .21     | 1.48                | .21                          | 3.41             | 36.7                                       | .11     | .90                 | .45                          | 3.44             |
| 91.4             | —       | —                   | —                            | 5.43             | 129.9                                      | —       | —                   | —                            | 6.93             |
| 146.1            | .21     | 1.48                | .21                          | 11.47            | 206.9                                      | .11     | .90                 | .45                          | 12.97            |
| —                | —       | —                   | —                            | —                | —                                          | —       | —                   | —                            | —                |
| —                | —       | —                   | —                            | —                | .1                                         | —       | —                   | —                            | —                |
| 4.2              | —       | —                   | —                            | .07              | 8.3                                        | .11     | —                   | —                            | .19              |
| 1.9              | —       | .85                 | .85                          | .15              | 5.5                                        | —       | 3.25                | 1.46                         | .46              |
| 39.7             | —       | .42                 | .21                          | 2.18             | 33.1                                       | —       | 1.79                | .67                          | 1.97             |
| 2.3              | .42     | 2.11                | 1.06                         | .44              | 3.6                                        | .56     | 2.46                | 1.23                         | .44              |
| 1.3              | .21     | .42                 | .21                          | .16              | 1.5                                        | .34     | .11                 | .24                          | .13              |
| 3.0              | .42     | .63                 | .85                          | .16              | .8                                         | —       | .22                 | .45                          | .08              |
| .8               | —       | .63                 | .42                          | .12              | .4                                         | —       | .45                 | .45                          | .08              |
| 8.2              | —       | —                   | .63                          | .47              | 12.1                                       | —       | —                   | —                            | .56              |
| 5.5              | —       | .21                 | .21                          | .19              | 8.0                                        | —       | .34                 | .34                          | .37              |
| 1.5              | .42     | .42                 | .85                          | .15              | .4                                         | .34     | .34                 | .45                          | .03              |
| 21.3             | .21     | .43                 | .63                          | .93              | 33.4                                       | .56     | .34                 | .34                          | 1.33             |
| 76.4             | —       | —                   | —                            | 1.52             | 77.8                                       | .23     | .45                 | .23                          | 1.81             |
| 3.4              | —       | —                   | —                            | .31              | 12.2                                       | —       | —                   | —                            | 1.43             |
| 1.7              | —       | .63                 | .21                          | .14              | 6                                          | .36     | .11                 | —                            | .63              |
| 70.9             | —       | —                   | —                            | 4.94             | 126.0                                      | —       | —                   | .11                          | 8.36             |
| 1.1              | —       | .21                 | —                            | .10              | 1.2                                        | .11     | .34                 | .11                          | .09              |
| 13.3             | —       | —                   | —                            | .06              | 14.2                                       | —       | —                   | .23                          | .63              |
| 27.9             | —       | —                   | —                            | .75              | 39.5                                       | —       | —                   | —                            | .28              |
| —                | —       | —                   | —                            | —                | .1                                         | .11     | —                   | —                            | —                |
| —                | .21     | —                   | —                            | —                | .1                                         | .11     | —                   | —                            | —                |
| 110.0            | .21     | .21                 | .43                          | 4.21             | 110.5                                      | .67     | .34                 | .11                          | 3.97             |
| 2.3              | —       | —                   | —                            | .06              | 3.4                                        | —       | —                   | —                            | .08              |
| —                | —       | —                   | —                            | —                | —                                          | —       | —                   | —                            | —                |
| 586.3            | 3.87    | 19.00               | 6.75                         | 36.47            | 758.1                                      | 7.84    | 23.99               | 7.06                         | 43.40            |
| 535.2            | 6.89    | 33.44               | 13.13                        | 49.68            | —                                          | —       | —                   | —                            | —                |

years 1886 to 1888 will be given in the Report for 1889; those for the four years that for 1890, &c., &c.



ABSTRACT No. III.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS the TROOPS stationed at MALTA during the Year 1838, with the Ratios

| Average Strength, 6,353.                        |                                  | Admissions into Hospital. | Deaths.           |              |        | Invalids.         |                                          | Average Number Constantly Sick. |
|-------------------------------------------------|----------------------------------|---------------------------|-------------------|--------------|--------|-------------------|------------------------------------------|---------------------------------|
| Diseases.                                       |                                  |                           | In the Com- mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis- charged the Service. |                                 |
| I.—GENERAL DISEASES.                            |                                  |                           |                   |              |        |                   |                                          |                                 |
| GROUP "A."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.                                    | Small-pox . . . . .              | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Other Eruptive Fevers . . . . .  | 1                         | —                 | —            | —      | —                 | —                                        | 06                              |
|                                                 | Enteric Fever . . . . .          | 18                        | 12                | —            | 12     | 1                 | —                                        | 22                              |
|                                                 | Other Continued Fevers . . . . . | 452                       | 3                 | —            | 3      | 9                 | 2                                        | 26                              |
|                                                 | Yellow Fever . . . . .           | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Cholera . . . . .                | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Dysentery . . . . .              | 27                        | 4                 | —            | 4      | 1                 | —                                        | 65                              |
|                                                 | Other Diseases . . . . .         | —                         | —                 | —            | —      | —                 | —                                        | 02                              |
| Total . . . . .                                 |                                  | 498                       | 19                | —            | 19     | 11                | 2                                        | 21                              |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 12                        | —                 | —            | —      | —                 | —                                        | 53                              |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | 1                         | —                 | —            | —      | —                 | —                                        | 23                              |
| Sub-Group IV.                                   | Syphilis, Primary . . . . .      | 84                        | —                 | —            | —      | —                 | —                                        | 23                              |
|                                                 | "    Secondary . . . . .         | 86                        | —                 | —            | —      | 1                 | 1                                        | 79                              |
|                                                 | Gonorrhoea . . . . .             | 338                       | —                 | —            | —      | —                 | —                                        | 33                              |
| Total . . . . .                                 |                                  | 508                       | —                 | —            | —      | 1                 | 1                                        | 36                              |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| GROUP "B."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | 17                        | —                 | —            | —      | —                 | 1                                        | 33                              |
| Sub-Group II.                                   | Scurvy . . . . .                 | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Alcoholism . . . . .             | 14                        | 1                 | —            | 1      | —                 | —                                        | 62                              |
| GROUP "C."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Debility, &c. . . . .                           |                                  | 74                        | —                 | —            | —      | 9                 | 4                                        | 89                              |
| GROUP "D."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Rheumatism . . . . .                            |                                  | 143                       | 1                 | —            | 1      | 2                 | 2                                        | 75                              |
| Tubercular Diseases . . . . .                   |                                  | 11                        | 2                 | 1            | 3      | 6                 | 9                                        | 80                              |
| Other Diseases . . . . .                        |                                  | 19                        | —                 | —            | —      | 1                 | 1                                        | 63                              |
| II.—LOCAL DISEASES.                             |                                  |                           |                   |              |        |                   |                                          |                                 |
| Diseases of the—                                |                                  |                           |                   |              |        |                   |                                          |                                 |
| 1. Nervous System { Nervous Diseases . . . . .  |                                  | 20                        | 2                 | —            | 2      | 6                 | 7                                        | 19                              |
| { Mental " . . . . .                            |                                  | 7                         | —                 | —            | —      | 4                 | 2                                        | 12                              |
| 2. Eye . . . . .                                |                                  | 69                        | —                 | —            | —      | 1                 | 2                                        | 44                              |
| 3 & 4. Other Organs of Special Senses . . . . . |                                  | 76                        | —                 | —            | —      | 6                 | 4                                        | 88                              |
| 5. Circulatory System . . . . .                 |                                  | 51                        | 1                 | —            | 1      | 2                 | 4                                        | 47                              |
| 6. Respiratory " . . . . .                      |                                  | 127                       | 4                 | 1            | 5      | 10                | 8                                        | 13                              |
| 7. Digestive " . . . . .                        |                                  | 569                       | 3                 | —            | 3      | 4                 | —                                        | 21                              |
| 8. Lymphatic and Glandular System . . . . .     |                                  | 29                        | —                 | —            | —      | 1                 | 1                                        | 64                              |
| 9. Urinary System . . . . .                     |                                  | 14                        | —                 | —            | —      | 2                 | 1                                        | 77                              |
| 10. Generative " . . . . .                      |                                  | 182                       | —                 | —            | —      | 2                 | 2                                        | 73                              |
| 11. Organs of Locomotion . . . . .              |                                  | 40                        | —                 | —            | —      | 2                 | 1                                        | 87                              |
| 12. Connective Tissue . . . . .                 |                                  | 169                       | —                 | —            | —      | 1                 | 1                                        | 30                              |
| 13. Skin . . . . .                              |                                  | 255                       | —                 | —            | —      | 3                 | 1                                        | 47                              |
| III.—POISONS . . . . .                          |                                  | 1                         | 1                 | —            | 1      | —                 | —                                        | 01                              |
| IV.—INJURIES.                                   |                                  |                           |                   |              |        |                   |                                          |                                 |
| 1. General . . . . .                            |                                  | 2                         | 2                 | —            | 2      | —                 | —                                        | 11                              |
| 2. Local . . . . .                              |                                  | 549                       | 2                 | —            | 2      | 3                 | 2                                        | 33                              |
| 3. In Action . . . . .                          |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| No appreciable disease . . . . .                |                                  | 11                        | —                 | —            | —      | —                 | —                                        | 27                              |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| General Total . . . . .                         |                                  | 3,477                     | 38                | 2            | 40     | 77                | 56                                       | 118                             |
| *Average of 10 years, 1878-87 . . . . .         |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |

† The average ratios for 10 years will be given in future years. The average ratios 1886 to 1889 in

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                     |                              |                  | Average Ratio per 1,000 from 1886 to 1887.† |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|---------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| —                | —       | —                   | —                            | —                | ·2                                          | —       | —                   | —                            | ·08              |
| ·1               | —       | —                   | —                            | ·01              | ·1                                          | —       | —                   | —                            | —                |
| 2·8              | 1·89    | ·16                 | —                            | ·35              | 4·7                                         | 1·27    | ·29                 | —                            | 1·46             |
| 71·2             | ·47     | 1·41                | ·31                          | 5·24             | 127·0                                       | ·88     | 1·56                | —                            | 10·06            |
| —                | —       | —                   | —                            | —                | ·1                                          | ·10     | —                   | —                            | —                |
| 4·3              | ·63     | ·16                 | —                            | ·26              | 7·0                                         | ·48     | ·10                 | —                            | ·53              |
| —                | —       | —                   | —                            | —                | ·6                                          | ·10     | —                   | —                            | ·03              |
| 78·4             | 2·99    | 1·73                | ·31                          | 5·86             | 139·7                                       | 2·83    | 1·95                | —                            | 12·70            |
| 1·9              | —       | —                   | —                            | ·08              | 3·2                                         | ·59     | ·29                 | —                            | ·41              |
| ·1               | —       | —                   | —                            | ·04              | ·3                                          | —       | —                   | —                            | ·08              |
| 13·2             | —       | —                   | —                            | 1·29             | 17·0                                        | —       | —                   | —                            | 1·39             |
| 13·6             | —       | ·16                 | ·16                          | 1·23             | 10·9                                        | —       | ·29                 | —                            | ·89              |
| 53·2             | —       | —                   | —                            | 3·36             | 44·3                                        | —       | —                   | —                            | 2·94             |
| 80·0             | —       | ·16                 | ·16                          | 5·88             | 72·2                                        | —       | ·29                 | —                            | 5·23             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 2·7              | —       | —                   | ·16                          | ·05              | 1·4                                         | —       | —                   | —                            | ·08              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 2·2              | ·16     | —                   | —                            | ·10              | 3·4                                         | —       | ·10                 | —                            | ·12              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 11·7             | —       | 1·41                | ·63                          | 1·24             | 15·9                                        | —       | 1·47                | ·78                          | 1·41             |
| 22·5             | ·13     | ·31                 | ·31                          | 1·09             | 31·4                                        | —       | ·59                 | ·68                          | 2·27             |
| 1·7              | ·47     | ·95                 | 1·41                         | ·44              | 2·4                                         | ·98     | 1·96                | 1·37                         | ·41              |
| 3·0              | —       | ·16                 | ·16                          | ·26              | 2·6                                         | —       | ·19                 | ·29                          | ·20              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 4·6              | ·31     | ·95                 | 1·10                         | ·35              | 4·7                                         | ·10     | ·59                 | 1·08                         | ·31              |
| 1·1              | —       | ·63                 | ·31                          | ·33              | 1·2                                         | ·10     | ·98                 | 1·47                         | ·27              |
| 10·9             | —       | ·16                 | ·31                          | ·54              | 13·2                                        | —       | ·29                 | ·19                          | ·67              |
| 12·0             | —       | ·95                 | ·63                          | ·61              | 8·8                                         | —       | ·10                 | ·10                          | ·41              |
| 8·0              | ·16     | ·31                 | ·63                          | ·55              | 9·1                                         | ·19     | 1·56                | 1·96                         | ·92              |
| 20·0             | ·79     | 1·58                | 1·26                         | 1·91             | 22·0                                        | ·78     | 1·37                | ·78                          | 2·10             |
| 89·6             | ·47     | ·63                 | —                            | 3·18             | 91·0                                        | ·39     | ·88                 | ·19                          | 3·30             |
| 4·6              | —       | ·16                 | ·16                          | ·40              | 6·2                                         | —       | ·10                 | —                            | ·62              |
| 2·2              | —       | ·31                 | ·16                          | ·12              | 1·5                                         | —       | ·10                 | —                            | ·15              |
| 28·6             | —       | ·31                 | ·31                          | 2·00             | 30·2                                        | —       | ·19                 | —                            | 2·14             |
| 6·3              | —       | ·31                 | ·16                          | ·45              | 5·4                                         | ·10     | —                   | ·10                          | ·45              |
| 26·6             | —       | ·16                 | ·16                          | ·99              | 31·4                                        | —       | ·10                 | ·29                          | 1·19             |
| 40·1             | —       | ·47                 | ·16                          | 1·96             | 40·7                                        | —       | ·29                 | —                            | 1·96             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| ·1               | ·16     | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| ·3               | ·31     | —                   | —                            | ·02              | ·4                                          | ·59     | —                   | —                            | ·02              |
| 86·4             | ·31     | ·47                 | ·31                          | 4·15             | 91·3                                        | ·19     | ·48                 | ·39                          | 3·55             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 1·7              | —       | —                   | —                            | ·04              | 1·1                                         | —       | —                   | —                            | ·01              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | ·03              |
| 547·3            | 6·29    | 12·12               | 8·81                         | 35·24            | 629·8                                       | 6·84    | 13·87               | 9·57                         | 40·88            |
| 811·0            | 9·75    | 27·48               | 14·38                        | 50·01            | —                                           | —       | —                   | —                            | —                |

for the three years 1886 to 1888 will be given in the Report for 1889; those for the four years that for 1890, &c., &c.

**ABSTRACT No. IIIA.—TABLE showing the AVERAGE STRENGTH, ADMIS- among the ROYAL MALTA FENCIBLE ARTILLERY stationed at MALTA average Ratios for 10 Years.\***

| Average Strength, 363.                |                                   |   |    | Admissions into Hospital. | Deaths.           |              | Invalids. |                   | Average Number Constantly Sick. |
|---------------------------------------|-----------------------------------|---|----|---------------------------|-------------------|--------------|-----------|-------------------|---------------------------------|
| Diseases.                             |                                   |   |    |                           | In the Com- mand. | Of Invalids. | Total.    | Number sent Home. |                                 |
| I.—GENERAL DISEASES.                  |                                   |   |    |                           |                   |              |           |                   |                                 |
| GROUP "A."                            |                                   |   |    |                           |                   |              |           |                   |                                 |
| Sub-Group I.                          | Small-pox                         | - | -  | -                         | -                 | -            | -         | -                 | -                               |
|                                       | Other Eruptive Fevers             | - | -  | -                         | -                 | -            | -         | -                 | -                               |
|                                       | Enteric Fever                     | - | -  | -                         | -                 | -            | -         | -                 | -                               |
|                                       | Other Continued Fevers            | - | 24 | -                         | -                 | -            | -         | -                 | 1.55                            |
|                                       | Yellow Fever                      | - | -  | -                         | -                 | -            | -         | -                 | -                               |
|                                       | Cholera                           | - | -  | -                         | -                 | -            | -         | -                 | -                               |
|                                       | Dysentery                         | - | -  | -                         | -                 | -            | -         | -                 | -                               |
|                                       | Other Diseases                    | - | -  | 1                         | -                 | -            | -         | -                 | .03                             |
|                                       | Total                             | - | -  | 25                        | -                 | -            | -         | -                 | 1.58                            |
| Sub-Group II.—Malarial Fevers         |                                   |   |    | -                         | -                 | -            | -         | -                 | -                               |
| Sub-Group III.—Septic Diseases        |                                   |   |    | -                         | -                 | -            | -         | -                 | -                               |
| Sub-Group IV.                         | Syphilis, Primary                 | - | -  | 6                         | -                 | -            | -         | -                 | .42                             |
|                                       | " Secondary                       | - | -  | 6                         | -                 | -            | -         | -                 | .78                             |
|                                       | Gonorrhœa                         | - | -  | 14                        | -                 | -            | -         | 1                 | 1.56                            |
|                                       | Total                             | - | -  | 26                        | -                 | -            | -         | 1                 | 2.76                            |
| Sub-Group V.—Hydrophobia, &c.         |                                   |   |    | -                         | -                 | -            | -         | -                 | -                               |
| GROUP "B."                            |                                   |   |    |                           |                   |              |           |                   |                                 |
| Sub-Group I.—Parasitic Diseases       |                                   |   |    | -                         | -                 | -            | -         | -                 | -                               |
| Sub-Group II.                         | Scurvy                            | - | -  | -                         | -                 | -            | -         | -                 | -                               |
|                                       | Alcoholism                        | - | -  | -                         | -                 | -            | -         | -                 | -                               |
| GROUP "C."                            |                                   |   |    |                           |                   |              |           |                   |                                 |
| Debility, &c.                         |                                   |   |    | 2                         | -                 | -            | -         | 1                 | .36                             |
| GROUP "D."                            |                                   |   |    |                           |                   |              |           |                   |                                 |
| Rheumatism                            |                                   |   |    | 9                         | -                 | -            | -         | -                 | .23                             |
| Tubercular Diseases                   |                                   |   |    | -                         | -                 | -            | -         | -                 | -                               |
| Other Diseases                        |                                   |   |    | 2                         | -                 | -            | -         | 1                 | .26                             |
| II.—LOCAL DISEASES.                   |                                   |   |    |                           |                   |              |           |                   |                                 |
| Diseases of the—                      |                                   |   |    |                           |                   |              |           |                   |                                 |
| 1.                                    | Nervous System { Nervous Diseases | - | -  | 3                         | -                 | -            | -         | -                 | .04                             |
|                                       | " { Mental                        | - | -  | -                         | -                 | -            | -         | -                 | -                               |
| 2.                                    | Eye                               | - | -  | 7                         | -                 | -            | -         | -                 | .36                             |
| 3 & 4.                                | Other Organs of Special Senses    | - | -  | -                         | -                 | -            | -         | -                 | -                               |
| 5.                                    | Circulatory System                | - | -  | 1                         | -                 | -            | -         | -                 | .04                             |
| 6.                                    | Respiratory                       | - | -  | 16                        | -                 | -            | -         | 1                 | 1.10                            |
| 7.                                    | Digestive                         | - | -  | 40                        | -                 | -            | -         | -                 | .00                             |
| 8.                                    | Lymphatic and Glandular System    | - | -  | -                         | -                 | -            | -         | -                 | -                               |
| 9.                                    | Urinary System                    | - | -  | 1                         | -                 | -            | -         | -                 | .11                             |
| 10.                                   | Generative                        | - | -  | 2                         | -                 | -            | -         | -                 | .07                             |
| 11.                                   | Organs of Locomotion              | - | -  | 3                         | -                 | -            | -         | 1                 | .11                             |
| 12.                                   | Connective Tissue                 | - | -  | 5                         | -                 | -            | -         | -                 | .09                             |
| 13.                                   | Skin                              | - | -  | 24                        | -                 | -            | -         | -                 | .59                             |
| III.—POISONS.                         |                                   |   |    |                           |                   |              |           |                   |                                 |
| IV.—INJURIES.                         |                                   |   |    |                           |                   |              |           |                   |                                 |
| 1.                                    | General                           | - | -  | -                         | -                 | -            | -         | -                 | -                               |
| 2.                                    | Local                             | - | -  | 50                        | -                 | -            | -         | -                 | 1.40                            |
| 3.                                    | In Action                         | - | -  | -                         | -                 | -            | -         | -                 | -                               |
| No appreciable disease                |                                   |   |    | -                         | -                 | -            | -         | -                 | -                               |
| Cause unknown (refers to deaths only) |                                   |   |    | -                         | -                 | -            | -         | -                 | -                               |
| General Total                         |                                   |   |    | 216                       | -                 | -            | -         | 5                 | 9.70                            |
| * Average of 10 years, 1878-87        |                                   |   |    | -                         | -                 | -            | -         | -                 | -                               |

† The average ratios for 10 years will be given in future years. The average ratios 1886 to 1889 in

SIONS into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK during the Year 1888, with the Ratios per 1,000 of the Strength and the

| Ratio per 1,000. |         |                     |                              |                  | Average Ratio per 1,000 from 1886 to 1887.† |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|---------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 66.1             | —       | —                   | —                            | 4.27             | 82.0                                        | —       | —                   | —                            | 2.63             |
| —                | —       | —                   | —                            | —                | 1.4                                         | 1.39    | —                   | —                            | —                |
| 3.7              | —       | —                   | —                            | .08              | —                                           | —       | —                   | —                            | —                |
| 68.8             | —       | —                   | —                            | 4.35             | 83.4                                        | 1.39    | —                   | —                            | 2.63             |
| —                | —       | —                   | —                            | —                | 2.8                                         | —       | —                   | —                            | .08              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 16.5             | —       | —                   | —                            | 1.16             | 11.1                                        | —       | —                   | —                            | .97              |
| 16.5             | —       | —                   | —                            | 2.15             | 5.6                                         | —       | —                   | 1.39                         | .67              |
| 83.6             | —       | —                   | 2.75                         | 4.30             | 27.8                                        | —       | —                   | —                            | 1.75             |
| 71.6             | —       | —                   | 2.75                         | 7.61             | 44.5                                        | —       | —                   | 1.39                         | 3.39             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 5.5              | —       | —                   | 2.75                         | .99              | 16.7                                        | —       | —                   | 2.78                         | .63              |
| 24.8             | —       | —                   | —                            | .63              | 27.8                                        | —       | —                   | —                            | 1.24             |
| —                | —       | —                   | —                            | —                | 1.4                                         | —       | —                   | 1.39                         | .46              |
| 5.5              | —       | —                   | 2.75                         | .72              | 11.1                                        | —       | —                   | —                            | .53              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 8.3              | —       | —                   | —                            | .11              | 4.2                                         | —       | —                   | —                            | .06              |
| 19.3             | —       | —                   | —                            | .99              | 25.0                                        | —       | —                   | 1.39                         | 1.24             |
| —                | —       | —                   | —                            | —                | 8.3                                         | —       | —                   | 1.39                         | .37              |
| 3.7              | —       | —                   | —                            | .11              | 5.6                                         | —       | —                   | 2.78                         | .68              |
| 44.1             | —       | —                   | 2.75                         | 3.03             | 83.4                                        | —       | —                   | 1.39                         | 3.85             |
| 110.2            | —       | —                   | —                            | 1.65             | 107.1                                       | —       | —                   | 1.39                         | 2.07             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 3.7              | —       | —                   | —                            | .30              | 2.8                                         | —       | —                   | —                            | .06              |
| 5.5              | —       | —                   | —                            | .19              | 5.6                                         | —       | —                   | —                            | .10              |
| 8.3              | —       | —                   | 2.75                         | .30              | 8.3                                         | —       | —                   | 2.78                         | .76              |
| 13.8             | —       | —                   | —                            | .25              | 18.1                                        | —       | —                   | —                            | .51              |
| 66.1             | —       | —                   | —                            | 1.63             | 91.8                                        | —       | —                   | —                            | 2.59             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 137.8            | —       | —                   | —                            | 3.86             | 134.9                                       | —       | —                   | 1.39                         | 3.67             |
| —                | —       | —                   | —                            | —                | 1.4                                         | —       | —                   | —                            | .06              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 586.0            | —       | —                   | 13.77                        | 26.72            | 684.2                                       | 1.39    | —                   | 18.08                        | 25.00            |
| 686.0            | 5.46    | —                   | 19.34                        | 24.57            | —                                           | —       | —                   | —                            | —                |

for the three years 1886 to 1888 will be given in the Report for 1889; those for the four years that for 1890, &c., &c.

**ABSTRACT No. IV.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS the TROOPS stationed at OYPRUS during the Year 1888, with the Ratios**

| Average Strength, 855.                | Admissions into Hospital. | Deaths.              |              |        | Invalids.         |                                             | Average Number Constantly Sick. |
|---------------------------------------|---------------------------|----------------------|--------------|--------|-------------------|---------------------------------------------|---------------------------------|
| Diseases.                             |                           | In the Com-<br>mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis-<br>charged the Service. |                                 |
| I.—GENERAL DISEASES.                  |                           |                      |              |        |                   |                                             |                                 |
| GROUP "A."                            |                           |                      |              |        |                   |                                             |                                 |
| Sub-Group I. {                        | Small-pox                 | —                    | —            | —      | —                 | —                                           | —                               |
|                                       | Other Eruptive Fevers     | —                    | —            | —      | —                 | —                                           | —                               |
|                                       | Enteric Fever             | 6                    | 1            | 1      | —                 | —                                           | ·44                             |
|                                       | Other Continued Fevers    | 51                   | —            | —      | —                 | —                                           | 1·52                            |
|                                       | Yellow Fever              | —                    | —            | —      | —                 | —                                           | —                               |
|                                       | Cholera                   | —                    | —            | —      | —                 | —                                           | —                               |
|                                       | Dysentery                 | 17                   | —            | —      | —                 | —                                           | ·90                             |
| Other Diseases                        | —                         | —                    | —            | —      | —                 | —                                           |                                 |
| Total                                 | 74                        | 1                    | —            | 1      | —                 | —                                           | 2·86                            |
| Sub-Group II.—Malarial Fevers         | 62                        | —                    | —            | —      | —                 | —                                           | 1·55                            |
| Sub-Group III.—Septic Diseases        | 1                         | —                    | —            | —      | —                 | —                                           | ·02                             |
| Sub-Group IV. {                       | Syphilis, Primary         | 99                   | —            | —      | —                 | —                                           | 7·81                            |
|                                       | " Secondary               | 71                   | —            | —      | 1                 | —                                           | 4·20                            |
|                                       | Gonorrhœa                 | 117                  | —            | —      | —                 | —                                           | 6·86                            |
| Total                                 | 287                       | —                    | —            | —      | 1                 | —                                           | 18·87                           |
| Sub-Group V.—Hydrophobia, &c.         | —                         | —                    | —            | —      | —                 | —                                           | —                               |
| GROUP "B."                            |                           |                      |              |        |                   |                                             |                                 |
| Sub-Group I.—Parasitic Diseases       | 1                         | —                    | —            | —      | —                 | —                                           | ·01                             |
| Sub-Group II. {                       | Scurvy                    | —                    | —            | —      | —                 | —                                           | —                               |
|                                       | Alcoholism                | —                    | —            | —      | —                 | —                                           | —                               |
| GROUP "C."                            |                           |                      |              |        |                   |                                             |                                 |
| Debility, &c.                         | 6                         | —                    | —            | —      | —                 | —                                           | ·26                             |
| GROUP "D."                            |                           |                      |              |        |                   |                                             |                                 |
| Rheumatism                            | 26                        | —                    | —            | —      | —                 | —                                           | 1·44                            |
| Tubercular Diseases                   | —                         | —                    | —            | —      | —                 | —                                           | —                               |
| Other Diseases                        | 4                         | —                    | —            | —      | —                 | —                                           | ·25                             |
| II.—LOCAL DISEASES.                   |                           |                      |              |        |                   |                                             |                                 |
| Diseases of the—                      |                           |                      |              |        |                   |                                             |                                 |
| 1. Nervous System {                   | Nervous Diseases          | 4                    | 1            | 1      | —                 | —                                           | ·05                             |
|                                       | Mental                    | 1                    | —            | —      | 1                 | —                                           | ·37                             |
| 2. Eye                                |                           | 8                    | —            | —      | 1                 | 1                                           | 53                              |
| 3 & 4. Other Organs of Special Senses |                           | —                    | —            | —      | 1                 | —                                           | —                               |
| 5. Circulatory System                 |                           | —                    | —            | —      | —                 | 1                                           | —                               |
| 6. Respiratory                        |                           | 18                   | —            | —      | 1                 | 1                                           | 1·04                            |
| 7. Digestive                          |                           | 75                   | —            | —      | —                 | —                                           | 2·96                            |
| 8. Lymphatic and Glandular System     |                           | 46                   | —            | —      | —                 | —                                           | 5·84                            |
| 9. Urinary System                     |                           | —                    | —            | —      | —                 | —                                           | —                               |
| 10. Generative                        |                           | 71                   | —            | —      | —                 | —                                           | 5·06                            |
| 11. Organs of Locomotion              |                           | 7                    | —            | —      | —                 | 1                                           | ·37                             |
| 12. Connective Tissue                 |                           | 21                   | —            | —      | —                 | —                                           | 1·09                            |
| 13. Skin                              |                           | 35                   | —            | —      | —                 | —                                           | 1·43                            |
| III.—POISONS.                         |                           |                      |              |        |                   |                                             |                                 |
| V.—INJURIES.                          |                           |                      |              |        |                   |                                             |                                 |
| 1. General                            | —                         | —                    | —            | —      | —                 | —                                           | —                               |
| 2. Local                              | 79                        | 1                    | —            | 1      | —                 | —                                           | 2·79                            |
| 3. In Action                          | —                         | —                    | —            | —      | —                 | —                                           | —                               |
| No appreciable disease                | —                         | —                    | —            | —      | —                 | —                                           | —                               |
| Cause unknown (refers to deaths only) | —                         | —                    | —            | —      | —                 | —                                           | —                               |
| General Total                         | 826                       | 3                    | —            | 3      | 4                 | 4                                           | 46·79                           |
| * Average of 10 years, 1878-87        | —                         | —                    | —            | —      | —                 | —                                           | —                               |

† The average ratios for 10 years will be given in future years. The average ratios years 1886 to 1890 in

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among per 1,000 of the Strength and the average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                     |                              |                  | Average Ratio per 1,000 from 1886 to 1887.† |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|---------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 7·0              | 1·17    | —                   | —                            | ·51              | 12·6                                        | 5·43    | 3·61                | —                            | ·12              |
| 59·6             | —       | —                   | —                            | 1·78             | 94·8                                        | —       | —                   | —                            | 2·63             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | 3·06             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 19·9             | —       | —                   | —                            | 1·03             | 29·8                                        | ·90     | —                   | —                            | 1·83             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 86·5             | 1·17    | —                   | —                            | 3·34             | 138·1                                       | 6·32    | 3·61                | —                            | 7·65             |
| 72·5             | —       | —                   | —                            | 1·81             | 123·7                                       | ·90     | ·90                 | —                            | 3·30             |
| 1·2              | —       | —                   | —                            | ·02              | 3·6                                         | —       | —                   | —                            | ·25              |
| 115·8            | —       | —                   | —                            | 9·14             | 101·1                                       | —       | —                   | —                            | 7·47             |
| 83·0             | —       | 1·17                | —                            | 4·91             | 30·7                                        | —       | —                   | —                            | 3·00             |
| 196·8            | —       | —                   | —                            | 8·03             | 80·3                                        | —       | —                   | —                            | 3·85             |
| 335·6            | —       | 1·17                | —                            | 22·07            | 212·1                                       | —       | —                   | —                            | 14·32            |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 1·2              | —       | —                   | —                            | ·01              | 3·6                                         | —       | —                   | —                            | ·06              |
| —                | —       | —                   | —                            | —                | 2·7                                         | —       | —                   | —                            | ·19              |
| —                | —       | —                   | —                            | —                | 7·8                                         | —       | —                   | —                            | ·83              |
| 7·0              | —       | —                   | —                            | ·31              | 23·6                                        | —       | 1·81                | ·90                          | 1·84             |
| 30·4             | —       | —                   | —                            | 1·69             | 24·4                                        | —       | —                   | —                            | 1·15             |
| 4·7              | —       | —                   | —                            | ·29              | ·9                                          | —       | —                   | —                            | ·15              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | ·02              |
| 4·7              | 1·17    | —                   | —                            | ·06              | 2·7                                         | —       | 1·81                | 1·81                         | ·18              |
| 1·2              | —       | 1·17                | —                            | ·43              | ·9                                          | —       | ·90                 | —                            | ·15              |
| 9·4              | —       | 1·17                | 1·17                         | ·63              | 15·8                                        | —       | —                   | —                            | ·72              |
| —                | —       | —                   | —                            | —                | 3·6                                         | —       | ·90                 | ·90                          | ·21              |
| —                | —       | —                   | 1·17                         | —                | 1·8                                         | ·90     | ·90                 | —                            | ·56              |
| 31·1             | —       | 1·17                | 1·17                         | 1·22             | 17·2                                        | ·90     | —                   | —                            | ·49              |
| 87·7             | —       | —                   | —                            | 3·46             | 109·2                                       | ·90     | ·90                 | —                            | 3·49             |
| 53·8             | —       | —                   | —                            | 6·53             | 7·2                                         | —       | ·90                 | ·90                          | ·30              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 83·0             | —       | —                   | —                            | 5·92             | 16·2                                        | —       | —                   | —                            | ·71              |
| 8·2              | —       | —                   | 1·17                         | ·43              | 8·1                                         | —       | 1·81                | ·90                          | ·65              |
| 24·6             | —       | —                   | —                            | 1·22             | 37·0                                        | —       | ·90                 | —                            | 2·00             |
| 40·9             | —       | —                   | —                            | 1·67             | 48·7                                        | —       | —                   | —                            | 1·83             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 92·4             | 1·17    | —                   | —                            | 3·26             | 106·3                                       | —       | ·90                 | ·90                          | ·63              |
| —                | —       | —                   | —                            | —                | ·9                                          | —       | —                   | —                            | 4·27             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | ·08              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 908·1            | 3·51    | 4·68                | 4·68                         | 54·72            | 917·8                                       | 9·02    | 14·44               | 6·32                         | 45·11            |
| 1472·9           | 16·44   | 30·43               | 13·78                        | 60·30            | —                                           | —       | —                   | —                            | —                |

for the three years 1886 to 1888 will be given in the Report for 1889; those for the four that for 1890, &c., &c.

ABSTRACT No. V.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS the TROOPS stationed in CANADA during the Year 1888, with the

| Average Strength, 1,329.                       |                                  | Admissions into Hospital. | Deaths.      |        |                   | Invalids.                                |   | Average Number Constantly Sick. |
|------------------------------------------------|----------------------------------|---------------------------|--------------|--------|-------------------|------------------------------------------|---|---------------------------------|
| Diseases.                                      | In the Com- mand.                |                           | Of Invalids. | Total. | Number sent Home. | Number finally Dis- charged the Service. |   |                                 |
| I.—GENERAL DISEASES.                           |                                  |                           |              |        |                   |                                          |   |                                 |
| GROUP "A."                                     |                                  |                           |              |        |                   |                                          |   |                                 |
| Sub-Group I.                                   | Small-pox . . . . .              | 1                         | —            | —      | —                 | —                                        | — | 1.06                            |
|                                                | Other Eruptive Fevers . . . . .  | 12                        | 1            | —      | 1                 | 1                                        | — | 1.90                            |
|                                                | Enteric Fever . . . . .          | 3                         | —            | —      | —                 | —                                        | — | 1.20                            |
|                                                | Other Continued Fevers . . . . . | —                         | —            | —      | —                 | —                                        | — | —                               |
|                                                | Yellow Fever . . . . .           | —                         | —            | —      | —                 | —                                        | — | —                               |
|                                                | Cholera . . . . .                | —                         | —            | —      | —                 | —                                        | — | —                               |
|                                                | Dysentery . . . . .              | 3                         | —            | —      | —                 | —                                        | — | 1.23                            |
| Other Diseases . . . . .                       |                                  |                           |              |        |                   |                                          |   |                                 |
| Total . . . . .                                |                                  | 19                        | 1            | —      | 1                 | 1                                        | — | 2.37                            |
| Sub-Group II.—Malarial Fevers . . . . .        |                                  |                           |              |        |                   |                                          |   |                                 |
| Sub-Group III.—Septic Diseases . . . . .       |                                  |                           |              |        |                   |                                          |   |                                 |
| Sub-Group IV.                                  | Syphilis, Primary . . . . .      | 39                        | —            | —      | —                 | —                                        | — | 2.83                            |
|                                                | " Secondary . . . . .            | 23                        | —            | —      | —                 | 2                                        | 2 | 2.24                            |
|                                                | Gonorrhoea . . . . .             | 95                        | —            | —      | —                 | —                                        | — | 5.34                            |
| Total . . . . .                                |                                  | 157                       | —            | —      | —                 | 2                                        | 2 | 10.41                           |
| Sub-Group V.—Hydrophobia, &c. . . . .          |                                  |                           |              |        |                   |                                          |   |                                 |
| GROUP "B."                                     |                                  |                           |              |        |                   |                                          |   |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .      |                                  |                           |              |        |                   |                                          |   |                                 |
| Sub-Group II.                                  | Scurvy . . . . .                 | —                         | —            | —      | —                 | —                                        | — | —                               |
|                                                | Alcoholism . . . . .             | 3                         | —            | —      | —                 | —                                        | — | 1.07                            |
| GROUP "C."                                     |                                  |                           |              |        |                   |                                          |   |                                 |
| Debility, &c. . . . .                          |                                  | 1                         | —            | —      | —                 | —                                        | — | 1.28                            |
| GROUP "D."                                     |                                  |                           |              |        |                   |                                          |   |                                 |
| Rheumatism . . . . .                           |                                  | 56                        | —            | —      | —                 | 3                                        | — | 4.41                            |
| Tubercular Diseases . . . . .                  |                                  | 6                         | 2            | 1      | 3                 | 3                                        | 2 | 1.59                            |
| Other Diseases . . . . .                       |                                  | 8                         | —            | —      | —                 | 1                                        | 1 | 1.27                            |
| II.—LOCAL DISEASES.                            |                                  |                           |              |        |                   |                                          |   |                                 |
| Diseases of the—                               |                                  |                           |              |        |                   |                                          |   |                                 |
| 1. Nervous System { Nervous Diseases . . . . . |                                  | 21                        | —            | 1      | 1                 | 8                                        | 7 | 2.81                            |
|                                                |                                  |                           |              |        |                   |                                          |   |                                 |

† The average ratios for 10 years will be given in future years. The average ratios for 1886 to 1889 in

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among  
Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                           |                                         |                          | Average Ratio per 1,000 from 1886 to 1887.† |         |                                |                                         |                          |
|------------------|---------|---------------------------|-----------------------------------------|--------------------------|---------------------------------------------|---------|--------------------------------|-----------------------------------------|--------------------------|
| Admis-<br>sions. | Deaths. | Invalids<br>sent<br>Home. | Invalids<br>finally<br>Dis-<br>charged. | Con-<br>stantly<br>Sick. | Admis-<br>sions.                            | Deaths. | Inva-<br>lids<br>sent<br>Home. | Invalids<br>finally<br>Dis-<br>charged. | Con-<br>stantly<br>Sick. |
| —                | —       | —                         | —                                       | —                        | —                                           | —       | —                              | —                                       | —                        |
| ·8               | —       | —                         | —                                       | ·04                      | 2·3                                         | —       | —                              | —                                       | ·08                      |
| 9·0              | ·75     | ·75                       | —                                       | 1·43                     | ·4                                          | —       | —                              | —                                       | ·10                      |
| 2·3              | —       | —                         | —                                       | ·15                      | 3·9                                         | —       | —                              | —                                       | ·21                      |
| —                | —       | —                         | —                                       | —                        | —                                           | —       | —                              | —                                       | —                        |
| —                | —       | —                         | —                                       | —                        | —                                           | —       | —                              | —                                       | —                        |
| 2·3              | —       | —                         | —                                       | ·17                      | —                                           | —       | —                              | —                                       | —                        |
| 14·3             | ·75     | ·75                       | —                                       | 1·78                     | 6·6                                         | —       | —                              | —                                       | ·39                      |
| —                | —       | —                         | —                                       | —                        | ·4                                          | —       | —                              | —                                       | —                        |
| —                | —       | —                         | —                                       | —                        | 5·1                                         | —       | —                              | —                                       | ·29                      |
| 29·3             | —       | —                         | —                                       | 2·13                     | 30·4                                        | —       | —                              | —                                       | 2·33                     |
| 17·3             | —       | 1·50                      | 1·50                                    | 1·68                     | 35·1                                        | —       | ·78                            | ·39                                     | 3·20                     |
| 71·5             | —       | —                         | —                                       | 4·02                     | 79·1                                        | —       | —                              | —                                       | 4·04                     |
| 118·1            | —       | 1·50                      | 1·50                                    | 7·83                     | 144·6                                       | —       | ·78                            | ·39                                     | 9·57                     |
| —                | —       | —                         | —                                       | —                        | —                                           | —       | —                              | —                                       | —                        |
| —                | —       | —                         | —                                       | —                        | ·8                                          | —       | —                              | —                                       | ·01                      |
| —                | —       | —                         | —                                       | —                        | ·4                                          | —       | —                              | —                                       | ·04                      |
| 2·2              | —       | —                         | —                                       | ·05                      | —                                           | —       | —                              | —                                       | —                        |
| ·8               | —       | —                         | —                                       | ·21                      | 3·9                                         | —       | 1·95                           | ·39                                     | ·22                      |
| 42·1             | —       | 2·26                      | —                                       | 3·32                     | 46·0                                        | —       | ·39                            | ·39                                     | 2·94                     |
| 4·5              | 2·26    | 2·26                      | 1·50                                    | ·44                      | —                                           | —       | —                              | ·78                                     | —                        |
| 2·3              | —       | ·75                       | ·75                                     | ·20                      | ·4                                          | —       | —                              | —                                       | ·03                      |
| —                | —       | —                         | —                                       | —                        | —                                           | —       | —                              | —                                       | —                        |
| 15·8             | ·75     | 6·02                      | 5·27                                    | 2·12                     | 12·9                                        | ·39     | 1·95                           | 1·56                                    | ·78                      |
| 3·0              | ·75     | 1·50                      | —                                       | ·43                      | ·4                                          | —       | ·39                            | ·78                                     | ·07                      |
| 13·5             | —       | 2·26                      | 2·26                                    | ·72                      | 10·5                                        | —       | —                              | ·78                                     | ·40                      |
| 7·5              | —       | 2·26                      | 2·26                                    | 1·27                     | 8·6                                         | —       | ·39                            | ·39                                     | ·60                      |
| 10·5             | ·75     | 1·50                      | 2·26                                    | 1·39                     | 16·0                                        | ·39     | 3·51                           | 3·90                                    | 1·57                     |
| 41·4             | —       | —                         | 1·50                                    | 2·44                     | 47·2                                        | 1·17    | 2·34                           | 1·95                                    | 3·61                     |
| 67·7             | —       | —                         | —                                       | 1·80                     | 91·6                                        | ·39     | ·39                            | —                                       | 2·28                     |
| 7·5              | —       | —                         | —                                       | ·67                      | 12·9                                        | —       | —                              | —                                       | 1·25                     |
| 3·6              | —       | 3·01                      | ·75                                     | ·73                      | 3·5                                         | ·78     | ·39                            | —                                       | ·46                      |
| 30·9             | —       | —                         | —                                       | 2·03                     | 30·0                                        | —       | —                              | —                                       | 1·15                     |
| 8·3              | —       | ·75                       | ·75                                     | ·90                      | 6·6                                         | —       | ·78                            | —                                       | ·68                      |
| 23·3             | —       | ·75                       | ·75                                     | 1·43                     | 21·4                                        | —       | —                              | —                                       | ·84                      |
| 36·1             | —       | —                         | ·75                                     | 1·50                     | 50·3                                        | —       | ·39                            | ·78                                     | 2·31                     |
| ·8               | ·75     | —                         | —                                       | —                        | —                                           | —       | —                              | —                                       | —                        |
| —                | —       | —                         | —                                       | —                        | ·8                                          | ·78     | —                              | —                                       | ·06                      |
| 64·0             | 2·26    | 1·50                      | ·75                                     | 3·41                     | 82·6                                        | —       | ·78                            | —                                       | 3·25                     |
| ·8               | —       | —                         | —                                       | ·05                      | 1·6                                         | —       | —                              | —                                       | ·10                      |
| —                | —       | —                         | —                                       | —                        | —                                           | —       | —                              | —                                       | —                        |
| 519·2            | 8·27    | 27·08                     | 20·30                                   | 34·72                    | 605·1                                       | 3·90    | 14·43                          | 12·09                                   | 32·88                    |
| 737·6            | 5·33    | 24·53                     | 19·01                                   | 38·96                    | —                                           | —       | —                              | —                                       | —                        |

the three years 1886 to 1888 will be given in the Report for 1889 those for the four years  
that for 1890, &c., &c.



**ABSTRACT No. VI.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS the TROOPS stationed at BERMUDA during the Year 1888, with the Ratios**

| Average Strength, 1,346.                        |                                  | Admissions into Hospital. | Deaths.      |        |                   | Invalids.                                |    | Average Number constantly Sick. |
|-------------------------------------------------|----------------------------------|---------------------------|--------------|--------|-------------------|------------------------------------------|----|---------------------------------|
| Diseases.                                       | In the Com- mand.                |                           | Of Invalids. | Total. | Number sent Home. | Number finally Dis- charged the Service. |    |                                 |
|                                                 |                                  |                           |              |        |                   |                                          |    |                                 |
| I.—GENERAL DISEASES.                            |                                  |                           |              |        |                   |                                          |    |                                 |
| GROUP "A."                                      |                                  |                           |              |        |                   |                                          |    |                                 |
| Sub-Group I.                                    | Small-pox . . . . .              | —                         | —            | —      | —                 | —                                        | —  | —                               |
|                                                 | Other Eruptive Fevers . . . . .  | 128                       | 18           | —      | 18                | —                                        | —  | 11'82                           |
|                                                 | Enteric Fever . . . . .          | 43                        | —            | —      | —                 | —                                        | —  | 2'27                            |
|                                                 | Other Continued Fevers . . . . . | —                         | —            | —      | —                 | —                                        | —  | —                               |
|                                                 | Yellow Fever . . . . .           | —                         | —            | —      | —                 | —                                        | —  | —                               |
|                                                 | Cholera . . . . .                | —                         | —            | —      | —                 | —                                        | —  | —                               |
|                                                 | Dysentery . . . . .              | 3                         | —            | —      | —                 | —                                        | —  | 1'10                            |
|                                                 | Other Diseases . . . . .         | 1                         | —            | —      | —                 | —                                        | —  | '05                             |
| Total . . . . .                                 |                                  | 176                       | 18           | —      | 18                | —                                        | —  | 14'22                           |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 1                         | —            | —      | —                 | —                                        | —  | '04                             |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | —                         | —            | —      | —                 | —                                        | —  | —                               |
| Sub-Group IV.                                   | { Syphilis, Primary . . . . .    | 34                        | —            | —      | —                 | —                                        | —  | 2'52                            |
|                                                 | { " Secondary . . . . .          | 29                        | —            | —      | —                 | —                                        | —  | 2'20                            |
|                                                 | { Gonorrhoea . . . . .           | 28                        | —            | —      | —                 | —                                        | —  | 1'06                            |
| Total . . . . .                                 |                                  | 91                        | —            | —      | —                 | —                                        | —  | 6'33                            |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                         | —            | —      | —                 | —                                        | —  | —                               |
| GROUP "B."                                      |                                  |                           |              |        |                   |                                          |    |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | —                         | —            | —      | —                 | —                                        | —  | —                               |
| Sub-Group II.                                   | { Scurvy . . . . .               | —                         | —            | —      | —                 | —                                        | —  | —                               |
|                                                 | { Alcoholism . . . . .           | 10                        | —            | —      | —                 | —                                        | —  | '25                             |
| GROUP "C."                                      |                                  |                           |              |        |                   |                                          |    |                                 |
| Debility, &c. . . . .                           |                                  | 10                        | —            | —      | —                 | 1                                        | —  | '44                             |
| GROUP "D."                                      |                                  |                           |              |        |                   |                                          |    |                                 |
| Rheumatism . . . . .                            |                                  | 31                        | —            | —      | —                 | —                                        | 1  | 1'80                            |
| Tubercular Diseases . . . . .                   |                                  | 3                         | —            | —      | —                 | 3                                        | 2  | '39                             |
| Other Diseases . . . . .                        |                                  | 7                         | —            | —      | —                 | —                                        | —  | '58                             |
| II.—LOCAL DISEASES.                             |                                  |                           |              |        |                   |                                          |    |                                 |
| Diseases of the—                                |                                  |                           |              |        |                   |                                          |    |                                 |
| 1. Nervous System { Nervous Diseases . . . . .  |                                  | 6                         | 2            | —      | 2                 | 1                                        | —  | '33                             |
| { Mental " . . . . .                            |                                  | 2                         | —            | —      | —                 | —                                        | —  | '23                             |
| 2. Eye . . . . .                                |                                  | 21                        | —            | —      | —                 | —                                        | —  | '76                             |
| 3 & 4. Other Organs of Special Senses . . . . . |                                  | 18                        | —            | —      | —                 | 1                                        | 3  | 1'16                            |
| 5. Circulatory System . . . . .                 |                                  | 18                        | —            | —      | —                 | 3                                        | 2  | 1'34                            |
| 6. Respiratory " . . . . .                      |                                  | 36                        | —            | —      | —                 | —                                        | 1  | 1'03                            |
| 7. Digestive . . . . .                          |                                  | 148                       | —            | —      | —                 | 2                                        | 1  | 4'16                            |
| 8. Lymphatic and Glandular System . . . . .     |                                  | 19                        | —            | —      | —                 | —                                        | —  | 1'29                            |
| 9. Urinary System . . . . .                     |                                  | 4                         | 1            | —      | 1                 | —                                        | —  | '10                             |
| 10. Generative " . . . . .                      |                                  | 24                        | —            | —      | —                 | —                                        | —  | 1'43                            |
| 11. Organs of Locomotion . . . . .              |                                  | 8                         | —            | —      | —                 | —                                        | —  | '70                             |
| 12. Connective Tissue . . . . .                 |                                  | 57                        | —            | —      | —                 | —                                        | —  | 1'50                            |
| 13. Skin . . . . .                              |                                  | 98                        | —            | —      | —                 | 1                                        | —  | 3'04                            |
| III.—POISONS . . . . .                          |                                  | —                         | 1            | —      | 1                 | —                                        | —  | —                               |
| IV.—INJURIES.                                   |                                  |                           |              |        |                   |                                          |    |                                 |
| 1. General . . . . .                            |                                  | —                         | 2            | —      | 2                 | —                                        | —  | —                               |
| 2. Local . . . . .                              |                                  | 139                       | —            | —      | —                 | —                                        | —  | 4'21                            |
| 3. In Action . . . . .                          |                                  | —                         | —            | —      | —                 | —                                        | —  | —                               |
| No appreciable disease . . . . .                |                                  | 6                         | —            | —      | —                 | —                                        | —  | '11                             |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                         | —            | —      | —                 | —                                        | —  | —                               |
| General Total . . . . .                         |                                  | 928                       | 24           | —      | 24                | 12                                       | 10 | 46'57                           |
| * Average of 10 years, 1878-87 . . . . .        |                                  | —                         | —            | —      | —                 | —                                        | —  | —                               |

† The average ratios for 10 years will be given in future years. The average ratios for 1886 to 1889 in

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                     |                              |                  | Average Ratio per 1,000 from 1886 to 1887.† |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|---------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 98.1             | 13.37   | —                   | —                            | 8.78             | 32.4                                        | 4.98    | —                   | —                            | 3.84             |
| 33.4             | —       | —                   | —                            | 1.89             | 31.5                                        | —       | —                   | —                            | 1.43             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 1.5              | —       | —                   | —                            | .07              | 2.9                                         | .41     | —                   | —                            | .17              |
| .7               | —       | —                   | —                            | .02              | —                                           | —       | —                   | —                            | —                |
| 130.7            | 13.37   | —                   | —                            | 10.56            | 66.8                                        | 5.39    | —                   | —                            | 5.49             |
| .7               | —       | —                   | —                            | .03              | 1.2                                         | —       | —                   | —                            | .01              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 25.3             | —       | —                   | —                            | 1.87             | 19.1                                        | —       | —                   | —                            | 1.98             |
| 21.5             | —       | —                   | —                            | 1.64             | 24.5                                        | —       | .83                 | .83                          | 2.03             |
| 20.8             | —       | —                   | —                            | 1.23             | 32.3                                        | —       | —                   | —                            | 2.09             |
| 67.6             | —       | —                   | —                            | 4.74             | 75.9                                        | —       | .83                 | .83                          | 6.10             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 7.4              | —       | —                   | —                            | .19              | 7.9                                         | .41     | —                   | —                            | .20              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 7.4              | —       | .74                 | —                            | .33              | 16.6                                        | —       | 2.49                | 1.25                         | 1.21             |
| 23.0             | —       | —                   | .74                          | 1.34             | 27.8                                        | —       | 1.25                | 1.66                         | 1.56             |
| 2.2              | —       | 2.23                | 1.49                         | .29              | 2.9                                         | 1.25    | 1.66                | 2.06                         | .57              |
| 5.2              | —       | —                   | —                            | .43              | 5.8                                         | —       | .83                 | —                            | .40              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 4.5              | 1.40    | .74                 | —                            | .25              | 7.5                                         | .41     | .41                 | —                            | .43              |
| 1.5              | —       | —                   | —                            | .17              | 1.2                                         | —       | .83                 | .83                          | .15              |
| 15.6             | —       | —                   | —                            | .56              | 17.4                                        | —       | 1.66                | 1.25                         | 1.05             |
| 13.4             | —       | .74                 | 2.23                         | .86              | 9.1                                         | —       | .41                 | .41                          | .58              |
| 13.4             | —       | 2.23                | 1.49                         | 1.00             | 20.7                                        | .83     | 4.06                | 4.14                         | 1.56             |
| 26.7             | —       | —                   | .74                          | 1.20             | 35.7                                        | 1.66    | 2.91                | 2.49                         | 2.38             |
| 110.0            | —       | 1.49                | .74                          | 3.09             | 146.5                                       | .41     | 1.66                | .83                          | 4.90             |
| 14.1             | —       | —                   | —                            | .96              | 21.2                                        | —       | .41                 | .83                          | 1.53             |
| 3.0              | .74     | —                   | —                            | .07              | 2.1                                         | —       | —                   | —                            | .08              |
| 17.8             | —       | —                   | —                            | 1.06             | 23.4                                        | —       | —                   | .41                          | 1.06             |
| 5.9              | —       | —                   | —                            | .53              | 11.2                                        | —       | 2.06                | 2.49                         | .84              |
| 42.4             | —       | —                   | —                            | 1.48             | 24.1                                        | —       | —                   | —                            | .85              |
| 69.1             | —       | .74                 | —                            | 2.26             | 76.8                                        | —       | —                   | —                            | 3.14             |
| —                | .74     | —                   | —                            | —                | .4                                          | —       | —                   | —                            | .01              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| —                | 1.40    | —                   | —                            | —                | .4                                          | .83     | —                   | —                            | .13              |
| 106.3            | —       | —                   | —                            | 3.13             | 114.5                                       | 1.25    | .41                 | —                            | 3.84             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 4.5              | —       | —                   | —                            | .06              | 5.0                                         | —       | —                   | —                            | .14              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 699.4            | 17.83   | 8.91                | 7.43                         | 34.60            | 721.1                                       | 12.44   | 23.83               | 19.50                        | 38.23            |
| 645.0            | 8.63    | 16.60               | 10.78                        | 34.71            | —                                           | —       | —                   | —                            | —                |

the three years 1886 to 1888 will be given in the Report for 1889; those for the four years that for 1890, &c., &c.

**ABSTRACT No. VII.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS the WHITE TROOPS stationed in the WEST INDIES during the Year 1888, with**

| Average Strength, 1,164.              |                        | Admissions into Hospital. | Deaths.          |              |        | Invalids.         |                                         | Average Number Constantly Sick. |
|---------------------------------------|------------------------|---------------------------|------------------|--------------|--------|-------------------|-----------------------------------------|---------------------------------|
| Diseases.                             |                        |                           | In the Com-mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis-charged the Service. |                                 |
| I.—GENERAL DISEASES.                  |                        |                           |                  |              |        |                   |                                         |                                 |
| GROUP "A."                            |                        |                           |                  |              |        |                   |                                         |                                 |
| Sub-Group I.                          | Small-pox              | —                         | —                | —            | —      | —                 | —                                       | —                               |
|                                       | Other Eruptive Fevers  | 4                         | —                | —            | —      | —                 | —                                       | ·09                             |
|                                       | Enteric Fever          | 35                        | 1                | —            | 1      | —                 | —                                       | 5·19                            |
|                                       | Other Continued Fevers | 93                        | 1                | —            | 1      | —                 | —                                       | 3·91                            |
|                                       | Yellow Fever           | —                         | —                | —            | —      | —                 | —                                       | —                               |
|                                       | Cholera                | —                         | —                | —            | —      | —                 | —                                       | —                               |
|                                       | Dysentery              | 8                         | —                | —            | —      | —                 | —                                       | ·28                             |
|                                       | Other Diseases         | 1                         | —                | —            | —      | —                 | —                                       | ·02                             |
| Total                                 |                        | 141                       | 2                | —            | 2      | —                 | —                                       | 9·49                            |
| Sub-Group II.—Malarial Fevers         |                        | 45                        | —                | —            | —      | —                 | —                                       | 1·43                            |
| Sub-Group III.—Septic Diseases        |                        | 3                         | —                | —            | —      | —                 | —                                       | ·27                             |
| Sub-Group IV.                         | Syphilis, Primary      | 44                        | —                | —            | —      | —                 | —                                       | 3·98                            |
|                                       | " Secondary            | 44                        | —                | —            | —      | 2                 | —                                       | 3·32                            |
|                                       | Gonorrhoea             | 171                       | —                | —            | —      | —                 | —                                       | 9·92                            |
| Total                                 |                        | 259                       | —                | —            | —      | 2                 | —                                       | 17·22                           |
| Sub-Group V.—Hydrophobia, &c.         |                        | —                         | —                | —            | —      | —                 | —                                       | —                               |
| GROUP "B."                            |                        |                           |                  |              |        |                   |                                         |                                 |
| Sub-Group I.—Parasitic Diseases       |                        | 5                         | —                | —            | —      | —                 | —                                       | ·13                             |
| Sub-Group II.                         | Scurvy                 | —                         | —                | —            | —      | —                 | —                                       | —                               |
|                                       | Alcoholism             | 16                        | —                | —            | —      | —                 | —                                       | ·44                             |
| GROUP "C."                            |                        |                           |                  |              |        |                   |                                         |                                 |
| Debility, &c.                         |                        | 21                        | —                | —            | —      | 1                 | —                                       | ·76                             |
| GROUP "D."                            |                        |                           |                  |              |        |                   |                                         |                                 |
| Rheumatism                            |                        | 29                        | —                | —            | —      | 1                 | —                                       | 1·49                            |
| Tubercular Diseases                   |                        | 2                         | —                | —            | —      | 2                 | 2                                       | ·20                             |
| Other Diseases                        |                        | 7                         | —                | —            | —      | —                 | —                                       | ·63                             |
| II.—LOCAL DISEASES.                   |                        |                           |                  |              |        |                   |                                         |                                 |
| Diseases of the—                      |                        |                           |                  |              |        |                   |                                         |                                 |
| 1. Nervous System { Nervous Diseases  |                        | 8                         | —                | —            | —      | 1                 | —                                       | ·39                             |
| { Mental                              |                        | —                         | —                | —            | —      | —                 | 1                                       | —                               |
| 2. Eye                                |                        | 9                         | —                | —            | —      | —                 | —                                       | ·48                             |
| 3 & 4. Other Organs of Special Senses |                        | 14                        | —                | —            | —      | —                 | —                                       | ·26                             |
| 5. Circulatory System                 |                        | 16                        | —                | —            | —      | 1                 | 1                                       | ·64                             |
| 6. Respiratory                        |                        | 23                        | 1                | —            | 1      | 1                 | 2                                       | 1·59                            |
| 7. Digestive                          |                        | 132                       | —                | —            | —      | 2                 | 1                                       | 3·22                            |
| 8. Lymphatic and Glandular System     |                        | 44                        | —                | —            | —      | —                 | —                                       | 2·54                            |
| 9. Urinary System                     |                        | 3                         | —                | —            | —      | —                 | 1                                       | ·06                             |
| 10. Generative                        |                        | 159                       | —                | —            | —      | —                 | —                                       | 11·00                           |
| 11. Organs of Locomotion              |                        | 6                         | —                | —            | —      | 3                 | 1                                       | 1·01                            |
| 12. Connective Tissue                 |                        | 45                        | —                | —            | —      | —                 | —                                       | 2·09                            |
| 13. Skin                              |                        | 103                       | —                | —            | —      | —                 | —                                       | 3·57                            |
| III.—POISONS                          |                        | —                         | —                | —            | —      | —                 | —                                       | —                               |
| IV.—INJURIES.                         |                        |                           |                  |              |        |                   |                                         |                                 |
| 1. General                            |                        | —                         | 1                | —            | 1      | —                 | —                                       | ·01                             |
| 2. Local                              |                        | 187                       | —                | —            | —      | —                 | —                                       | 5·71                            |
| 3. In Action                          |                        | —                         | —                | —            | —      | —                 | —                                       | —                               |
| No appreciable disease                |                        | 2                         | —                | —            | —      | —                 | —                                       | ·04                             |
| Cause unknown (refers to deaths only) |                        | —                         | —                | —            | —      | —                 | —                                       | —                               |
| General Total                         |                        | 1,279                     | 4                | —            | 4      | 14                | 9                                       | 64·67                           |
| *Average for 10 Years 1877-86         |                        | —                         | —                | —            | —      | —                 | —                                       | —                               |

† The average ratios for 10 years will be given in future years. The average ratios for the 1886 to 1889 in that

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                     |                              |                  | Average Ratio per 1,000 from 1886 to 1897.† |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|---------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 3·4              | —       | —                   | —                            | ·08              | 20·1                                        | —       | —                   | —                            | ·45              |
| 80·1             | ·86     | —                   | —                            | 4·46             | 7·0                                         | 3·74    | —                   | —                            | ·68              |
| 79·9             | ·86     | —                   | —                            | 3·86             | 166·8                                       | ·47     | —                   | —                            | 5·03             |
| —                | —       | —                   | —                            | —                | ·9                                          | ·93     | —                   | —                            | ·03              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 6·9              | —       | —                   | —                            | ·24              | 8·4                                         | ·93     | ·47                 | —                            | ·34              |
| ·8               | —       | —                   | —                            | ·01              | ·9                                          | —       | —                   | —                            | ·01              |
| 121·1            | 1·72    | —                   | —                            | 8·15             | 204·1                                       | 6·07    | ·47                 | —                            | 6·48             |
| 33·6             | —       | —                   | —                            | 1·23             | 36·4                                        | 2·33    | —                   | —                            | 2·27             |
| 2·5              | —       | —                   | —                            | ·23              | ·9                                          | —       | —                   | —                            | ·01              |
| 37·8             | —       | —                   | —                            | 3·42             | 37·4                                        | —       | —                   | —                            | 2·71             |
| 37·8             | —       | 1·72                | —                            | 2·85             | 20·5                                        | ·47     | ·47                 | —                            | 2·34             |
| 146·9            | —       | —                   | —                            | 8·52             | 135·9                                       | —       | —                   | —                            | 8·80             |
| 222·5            | —       | 1·72                | —                            | 14·79            | 193·8                                       | ·47     | ·47                 | —                            | 13·65            |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 4·3              | —       | —                   | —                            | ·11              | 2·3                                         | —       | —                   | —                            | ·05              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 13·8             | —       | —                   | —                            | ·88              | 12·6                                        | —       | —                   | —                            | ·28              |
| 18·0             | —       | ·86                 | —                            | ·65              | 15·9                                        | —       | 2·80                | ·98                          | ·86              |
| 24·9             | —       | ·86                 | —                            | 1·28             | 32·2                                        | —       | —                   | ·98                          | 1·46             |
| 1·7              | —       | 1·72                | 1·72                         | ·17              | 2·3                                         | —       | 1·40                | ·93                          | ·36              |
| 6·0              | —       | —                   | —                            | ·54              | 6·5                                         | —       | —                   | —                            | ·30              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 6·9              | —       | ·86                 | —                            | ·33              | 13·1                                        | ·47     | 1·87                | 1·40                         | ·95              |
| —                | —       | —                   | ·86                          | —                | —                                           | —       | —                   | ·47                          | —                |
| 7·7              | —       | —                   | —                            | ·41              | 16·8                                        | —       | —                   | —                            | ·68              |
| 12·0             | —       | —                   | —                            | ·22              | 32·7                                        | —       | ·47                 | ·93                          | ·94              |
| 13·8             | —       | ·86                 | ·86                          | ·55              | 10·3                                        | —       | 2·33                | 2·34                         | ·76              |
| 19·8             | ·66     | ·86                 | 1·72                         | 1·37             | 42·5                                        | ·93     | ·47                 | ·93                          | 2·00             |
| 113·4            | —       | 1·72                | ·86                          | 2·77             | 99·5                                        | ·47     | —                   | —                            | 2·28             |
| 37·8             | —       | —                   | —                            | 2·18             | 47·2                                        | —       | —                   | ·47                          | 5·17             |
| 2·6              | —       | —                   | ·86                          | ·05              | 1·9                                         | ·47     | ·47                 | —                            | ·08              |
| 136·6            | —       | —                   | —                            | 9·45             | 79·4                                        | —       | ·47                 | ·47                          | 4·61             |
| 5·2              | —       | 2·57                | ·86                          | ·87              | 6·5                                         | ·47     | 1·87                | ·47                          | ·76              |
| 88·7             | —       | —                   | —                            | 1·80             | 27·6                                        | —       | —                   | ·47                          | ·93              |
| 88·5             | —       | —                   | —                            | 3·07             | 90·6                                        | —       | ·47                 | ·47                          | 3·28             |
| —                | —       | —                   | —                            | —                | ·5                                          | —       | —                   | —                            | —                |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| —                | ·86     | —                   | —                            | ·01              | ·5                                          | —       | —                   | —                            | ·07              |
| 160·7            | —       | —                   | —                            | 4·91             | 162·1                                       | 1·40    | ·93                 | ·47                          | 5·80             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 1·7              | —       | —                   | —                            | ·03              | 3·3                                         | —       | —                   | —                            | ·07              |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 1098·8           | 3·44    | 12·03               | 7·73                         | 55·55            | 1141·5                                      | 13·07   | 14·48               | 11·68                        | 53·88            |
| 952·9            | 16·18   | 25·06               | 14·27                        | 46·42            | —                                           | —       | —                   | —                            | —                |

three years 1896 to 1898 will be given in the Report for 1898; those for the four years for 1890, &c., &c.

ABSTRACT No. VIII.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS the BLACK TROOPS stationed in the WEST INDIES during the Year 1888, with

| Average Strength, 1,132.              |                        | Admissions into Hospital. | Deaths.           |              |        | Invalids.         |                                          | Average Number Constantly Sick. |
|---------------------------------------|------------------------|---------------------------|-------------------|--------------|--------|-------------------|------------------------------------------|---------------------------------|
| Diseases.                             |                        |                           | In the Com- mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis- charged the Service. |                                 |
| I.—GENERAL DISEASES.                  |                        |                           |                   |              |        |                   |                                          |                                 |
| GROUP "A."                            |                        |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.                          | Small-pox              | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Other Eruptive Fevers  | 5                         | —                 | —            | —      | —                 | —                                        | 1'05                            |
|                                       | Enteric Fever          | 76                        | —                 | —            | —      | —                 | —                                        | 3'29                            |
|                                       | Other Continued Fevers | —                         | —                 | —            | —      | —                 | —                                        | 8'01                            |
|                                       | Yellow Fever           | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Cholera                | 9                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Dysentery              | 1                         | —                 | —            | 1      | —                 | —                                        | 31                              |
|                                       | Other Diseases         | 4                         | —                 | —            | —      | —                 | —                                        | 08                              |
| Total                                 |                        | 97                        | 1                 | —            | 1      | —                 | —                                        | 4'74                            |
| Sub-Group II.—Malarial Fevers         |                        | 94                        | 1                 | —            | 1      | —                 | —                                        | 3'20                            |
| Sub-Group III.—Septic Diseases        |                        | 2                         | —                 | —            | —      | —                 | —                                        | 12                              |
| Sub-Group IV.                         | Syphilis, Primary      | 67                        | —                 | —            | —      | —                 | —                                        | 6'50                            |
|                                       | " Secondary            | 63                        | —                 | —            | —      | —                 | 4                                        | 4'49                            |
|                                       | Gonorrhoea             | 175                       | —                 | —            | —      | —                 | —                                        | 11'22                           |
| Total                                 |                        | 305                       | —                 | —            | —      | —                 | 4                                        | 22'91                           |
| Sub-Group V.—Hydrophobia, &c.         |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| GROUP "B."                            |                        |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.—Parasitic Diseases       |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| Sub-Group II.                         | Scurvy                 | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Alcoholism             | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| GROUP "C."                            |                        |                           |                   |              |        |                   |                                          |                                 |
| Debility, &c.                         |                        | 13                        | —                 | —            | —      | —                 | 3                                        | 81                              |
| GROUP "D."                            |                        |                           |                   |              |        |                   |                                          |                                 |
| Rheumatism                            |                        | 74                        | —                 | —            | —      | —                 | 3                                        | 4'66                            |
| Tubercular Diseases                   |                        | 5                         | 4                 | —            | 4      | —                 | 2                                        | 7'73                            |
| Other Diseases                        |                        | 7                         | —                 | —            | —      | —                 | 6                                        | 78                              |
| II.—LOCAL DISEASES.                   |                        |                           |                   |              |        |                   |                                          |                                 |
| Diseases of the—                      |                        |                           |                   |              |        |                   |                                          |                                 |
| 1. Nervous System { Nervous Diseases  |                        | 9                         | —                 | —            | —      | —                 | 1                                        | 36                              |
| { Mental                              |                        | 2                         | —                 | —            | —      | —                 | 2                                        | 56                              |
| 2. Eye                                |                        | 26                        | —                 | —            | —      | —                 | 4                                        | 2'41                            |
| 3 & 4. Other Organs of Special Senses |                        | 3                         | —                 | —            | —      | —                 | —                                        | 3'20                            |
| 5. Circulatory System                 |                        | 28                        | 1                 | —            | 1      | —                 | 9                                        | 2'26                            |
| 6. Respiratory                        |                        | 55                        | 3                 | —            | 3      | —                 | 3                                        | 3'37                            |
| 7. Digestive                          |                        | 56                        | 2                 | —            | 2      | —                 | 1                                        | 1'53                            |
| 8. Lymphatic and Glandular System     |                        | 58                        | —                 | —            | —      | —                 | —                                        | 5'24                            |
| 9. Urinary System                     |                        | 1                         | —                 | —            | —      | —                 | —                                        | 19                              |
| 10. Generative                        |                        | 192                       | —                 | —            | —      | —                 | 8                                        | 15'67                           |
| 11. Organs of Locomotion              |                        | 18                        | —                 | —            | —      | —                 | 4                                        | 96                              |
| 12. Connective Tissue                 |                        | 37                        | —                 | —            | —      | —                 | —                                        | 1'48                            |
| 13. Skin                              |                        | 88                        | —                 | —            | —      | —                 | 1                                        | 4'91                            |
| III.—POISONS                          |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| IV.—INJURIES.                         |                        |                           |                   |              |        |                   |                                          |                                 |
| 1. General                            |                        | 3                         | 1                 | —            | 1      | —                 | —                                        | 02                              |
| 2. Local                              |                        | 100                       | —                 | —            | —      | —                 | 1                                        | 3'56                            |
| 3. In Action                          |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| No appreciable disease                |                        | 13                        | —                 | —            | —      | —                 | —                                        | 23                              |
| Cause unknown (refers to deaths only) |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| General Total                         |                        | 1,286                     | 13                | —            | 13     | —                 | 52                                       | 51'18                           |
| *Average of 10 years, 1878-87         |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |

† The average ratios for 10 years will be given in future years. The average ratios for the 1886 to 1890 in

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                           |                                         |                          | Average Ratio per 1,000 1886 from 1887† |         |                                |                                         |                          |
|------------------|---------|---------------------------|-----------------------------------------|--------------------------|-----------------------------------------|---------|--------------------------------|-----------------------------------------|--------------------------|
| Admis-<br>sions. | Deaths. | Invalids<br>sent<br>Home. | Invalids<br>finally<br>Dis-<br>charged. | Con-<br>stantly<br>Sick. | Admis-<br>sions.                        | Deaths. | Inva-<br>lids<br>sent<br>Home. | Invalids<br>finally<br>Dis-<br>charged. | Con-<br>stantly<br>Sick. |
| —                | —       | —                         | —                                       | —                        | —                                       | —       | —                              | —                                       | —                        |
| 4'4              | —       | —                         | —                                       | '93                      | 6'0                                     | —       | —                              | —                                       | '05                      |
| 2'7              | —       | —                         | —                                       | '26                      | —                                       | —       | —                              | —                                       | '33                      |
| 67'1             | —       | —                         | —                                       | 2'66                     | 162'2                                   | '48     | —                              | —                                       | 5'46                     |
| —                | —       | —                         | —                                       | —                        | —                                       | —       | —                              | —                                       | —                        |
| 7'9              | '83     | —                         | —                                       | '27                      | 23'7                                    | '86     | —                              | '43                                     | 1'24                     |
| 3'5              | —       | —                         | —                                       | '07                      | 35'7                                    | —       | —                              | —                                       | '74                      |
| 85'6             | '88     | —                         | —                                       | 4'19                     | 228'0                                   | 1'29    | —                              | '43                                     | 7'90                     |
| 83'0             | '83     | —                         | —                                       | 2'83                     | 117'4                                   | 4'73    | —                              | '80                                     | 3'23                     |
| 1'8              | —       | —                         | —                                       | '10                      | '4                                      | —       | —                              | —                                       | —                        |
| 59'2             | —       | —                         | —                                       | 5'74                     | 83'0                                    | —       | —                              | —                                       | 6'93                     |
| 55'6             | —       | —                         | 3'53                                    | 3'97                     | 24'5                                    | —       | —                              | 1'29                                    | 1'64                     |
| 154'6            | —       | —                         | —                                       | 10'53                    | 166'9                                   | —       | —                              | —                                       | 8'23                     |
| 269'4            | —       | —                         | 3'53                                    | 20'24                    | 274'4                                   | —       | —                              | 1'29                                    | 16'81                    |
| —                | —       | —                         | —                                       | —                        | —                                       | —       | —                              | —                                       | —                        |
| —                | —       | —                         | —                                       | —                        | 1'7                                     | —       | —                              | —                                       | '02                      |
| —                | —       | —                         | —                                       | —                        | '4                                      | —       | —                              | —                                       | —                        |
| 11'5             | —       | —                         | 2'65                                    | '71                      | 6'9                                     | —       | —                              | 3'01                                    | '36                      |
| 65'4             | —       | —                         | 2'65                                    | 4'12                     | 73'5                                    | —       | —                              | 2'58                                    | 3'46                     |
| 4'4              | 3'53    | —                         | 1'77                                    | '64                      | 6'5                                     | 2'58    | —                              | 6'02                                    | 1'42                     |
| 6'2              | —       | —                         | 5'30                                    | '64                      | 6'5                                     | '43     | —                              | 3'44                                    | '96                      |
| 7'9              | —       | —                         | '88                                     | '34                      | 15'9                                    | '86     | —                              | 2'58                                    | '97                      |
| 1'8              | —       | —                         | 1'77                                    | '49                      | '9                                      | —       | —                              | 1'72                                    | '28                      |
| 23'0             | —       | —                         | 3'53                                    | 2'13                     | 22'4                                    | —       | —                              | 2'53                                    | 1'67                     |
| 2'7              | —       | —                         | —                                       | '18                      | 6'0                                     | —       | —                              | '86                                     | '53                      |
| 24'7             | '88     | —                         | 7'95                                    | 2'00                     | 13'3                                    | —       | —                              | 5'59                                    | 1'67                     |
| 43'6             | 2'65    | —                         | 2'63                                    | 2'98                     | 62'8                                    | 2'15    | —                              | 2'58                                    | 4'01                     |
| 49'5             | 1'77    | —                         | '88                                     | 1'62                     | 86'9                                    | '86     | —                              | 2'15                                    | 2'08                     |
| 51'2             | —       | —                         | —                                       | 4'63                     | 40'4                                    | —       | —                              | '43                                     | 2'75                     |
| '9               | —       | —                         | —                                       | '17                      | 3'0                                     | '43     | —                              | '86                                     | '28                      |
| 169'6            | —       | —                         | 7'07                                    | 13'84                    | 140'7                                   | —       | —                              | '80                                     | 10'23                    |
| 15'9             | —       | —                         | 3'53                                    | '86                      | 9'5                                     | —       | —                              | 3'44                                    | '75                      |
| 32'7             | —       | —                         | —                                       | 1'31                     | 34'8                                    | —       | —                              | '43                                     | 1'80                     |
| 77'7             | —       | —                         | '88                                     | 4'34                     | 66'2                                    | —       | —                              | —                                       | 1'98                     |
| —                | —       | —                         | —                                       | —                        | —                                       | —       | —                              | —                                       | —                        |
| 2'7              | '83     | —                         | —                                       | '02                      | '4                                      | '43     | —                              | —                                       | '01                      |
| 83'3             | —       | —                         | '88                                     | 3'14                     | 89'0                                    | '43     | —                              | '43                                     | 2'83                     |
| —                | —       | —                         | —                                       | —                        | —                                       | —       | —                              | —                                       | —                        |
| 11'5             | —       | —                         | —                                       | '19                      | 5'6                                     | —       | —                              | —                                       | '06                      |
| —                | —       | —                         | —                                       | —                        | —                                       | —       | —                              | —                                       | —                        |
| 1136'0           | 11'48   | —                         | 45'93                                   | 71'71                    | 1313'5                                  | 15'48   | —                              | 42'15                                   | 66'08                    |
| 1113'2           | 14'74   | —                         | 38'59                                   | 60'56                    | —                                       | —       | —                              | —                                       | —                        |

three years 1886 to 1888, will be given in the Report for 1889; those for the four years that for 1890, &c., &c.

ABSTRACT No. IX.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS among the BLACK TROOPS stationed at WEST AFRICA during the Year 1888,

| Average Strength, 502.                |                        | Admissions into Hospital. | Deaths.           |              |        | Invalids.                   |                                          | Average Number Constantly Sick. |
|---------------------------------------|------------------------|---------------------------|-------------------|--------------|--------|-----------------------------|------------------------------------------|---------------------------------|
| Diseases.                             |                        |                           | In the Com- mand. | Of Invalids. | Total. | Number sent to West Indies. | Number finally Dis- charged the Service. |                                 |
| I.—GENERAL DISEASES.                  |                        |                           |                   |              |        |                             |                                          |                                 |
| GROUP "A."                            |                        |                           |                   |              |        |                             |                                          |                                 |
| Sub-Group I.                          | Small-pox              | —                         | —                 | —            | —      | —                           | —                                        | —                               |
|                                       | Other Eruptive Fevers  | 1                         | —                 | —            | —      | —                           | —                                        | ·63                             |
|                                       | Enteric Fever          | —                         | —                 | —            | —      | —                           | —                                        | —                               |
|                                       | Other Continued Fevers | —                         | —                 | —            | —      | —                           | —                                        | —                               |
|                                       | Yellow Fever           | —                         | —                 | —            | —      | —                           | —                                        | —                               |
|                                       | Cholera                | —                         | —                 | —            | —      | —                           | —                                        | —                               |
|                                       | Dysentery              | 12                        | —                 | —            | —      | —                           | —                                        | ·60                             |
| Other Diseases                        |                        | —                         | —                 | —            | —      | —                           | —                                        | —                               |
| Total                                 |                        | 13                        | —                 | —            | —      | —                           | —                                        | ·83                             |
| Sub-Group II.—Malarial Fevers         |                        | 98                        | 1                 | —            | 1      | —                           | —                                        | 1·55                            |
| Sub-Group III.—Septic Diseases        |                        | —                         | —                 | —            | —      | —                           | —                                        | —                               |
| Sub-Group IV.                         | Syphilis, Primary      | 31                        | —                 | —            | —      | —                           | —                                        | 2·69                            |
|                                       | " Secondary            | 13                        | —                 | —            | —      | —                           | —                                        | 2·53                            |
|                                       | Gonorrhœa              | 72                        | —                 | —            | —      | —                           | —                                        | 4·18                            |
| Total                                 |                        | 116                       | —                 | —            | —      | —                           | —                                        | 9·40                            |
| Sub-Group V.—Hydrophobia, &c.         |                        | —                         | —                 | —            | —      | —                           | —                                        | —                               |
| GROUP "B."                            |                        |                           |                   |              |        |                             |                                          |                                 |
| Sub-Group I.—Parasitic Diseases       |                        | 2                         | —                 | —            | —      | —                           | —                                        | ·02                             |
| Sub-Group II.                         | Scurvy                 | —                         | —                 | —            | —      | —                           | —                                        | —                               |
|                                       | Alcoholism             | —                         | —                 | —            | —      | —                           | —                                        | —                               |
| GROUP "C."                            |                        |                           |                   |              |        |                             |                                          |                                 |
| Debility, &c.                         |                        | 7                         | —                 | —            | —      | —                           | —                                        | ·63                             |
| GROUP "D."                            |                        |                           |                   |              |        |                             |                                          |                                 |
| Rheumatism                            |                        | 33                        | —                 | —            | —      | —                           | —                                        | 2·10                            |
| Tubercular Diseases                   |                        | 4                         | 2                 | —            | 2      | —                           | —                                        | ·78                             |
| Other Diseases                        |                        | 2                         | —                 | —            | —      | —                           | —                                        | ·19                             |
| II.—LOCAL DISEASES.                   |                        |                           |                   |              |        |                             |                                          |                                 |
| Diseases of the—                      |                        |                           |                   |              |        |                             |                                          |                                 |
| 1. Nervous System { Nervous Diseases  |                        | 7                         | 1                 | —            | 1      | —                           | —                                        | ·44                             |
| { Mental                              |                        | 2                         | —                 | —            | —      | —                           | —                                        | ·25                             |
| 2. Eye                                |                        | 9                         | —                 | —            | —      | —                           | —                                        | ·61                             |
| 3 & 4. Other Organs of Special Senses |                        | —                         | —                 | —            | —      | —                           | —                                        | —                               |
| 5. Circulatory System                 |                        | 7                         | —                 | —            | —      | —                           | —                                        | ·26                             |
| 6. Respiratory                        |                        | 12                        | —                 | —            | —      | —                           | —                                        | ·53                             |
| 7. Digestive                          |                        | 27                        | —                 | —            | —      | —                           | —                                        | 1·13                            |
| 8. Lymphatic and Glandular System     |                        | 29                        | —                 | —            | —      | —                           | —                                        | 4·28                            |
| 9. Urinary System                     |                        | 11                        | 1                 | —            | 1      | —                           | —                                        | 1·17                            |
| 10. Generative                        |                        | 65                        | —                 | —            | —      | —                           | —                                        | 5·63                            |
| 11. Organs of Locomotion              |                        | 7                         | —                 | —            | —      | —                           | —                                        | ·66                             |
| 12. Connective Tissue                 |                        | 16                        | —                 | —            | —      | —                           | —                                        | 1·58                            |
| 13. Skin                              |                        | 118                       | —                 | —            | —      | —                           | —                                        | 6·06                            |
| III.—POISONS.                         |                        |                           |                   |              |        |                             |                                          |                                 |
| IV.—INJURIES.                         |                        |                           |                   |              |        |                             |                                          |                                 |
| 1. General                            |                        | —                         | —                 | —            | —      | —                           | —                                        | —                               |
| 2. Local                              |                        | 34                        | —                 | —            | —      | —                           | —                                        | 1·00                            |
| 3. In Action                          |                        | 3                         | —                 | —            | —      | —                           | —                                        | ·21                             |
| No appreciable disease                |                        | 4                         | —                 | —            | —      | —                           | —                                        | ·40                             |
| Cause unknown (refers to deaths only) |                        | —                         | —                 | —            | —      | —                           | —                                        | —                               |
| General Total                         |                        | 626                       | 5                 | —            | 5      | —                           | —                                        | 39·71                           |
| • Average of 10 years, 1878–87        |                        | —                         | —                 | —            | —      | —                           | —                                        | —                               |

† The average ratios for 10 years will be given in future years. The average ratios 1886 to 1889 in that

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK with the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                               |                              |                  | Average Ratio per 1,000 from 1886 to 1887.† |         |                               |                              |                  |
|------------------|---------|-------------------------------|------------------------------|------------------|---------------------------------------------|---------|-------------------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent to West Indies. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids sent to West Indies. | Invalids finally Discharged. | Constantly Sick. |
| —                | —       | —                             | —                            | —                | —                                           | —       | —                             | —                            | —                |
| 2·0              | —       | —                             | —                            | ·06              | —                                           | —       | —                             | —                            | —                |
| —                | —       | —                             | —                            | —                | —                                           | —       | —                             | —                            | —                |
| —                | —       | —                             | —                            | —                | 34·5                                        | —       | —                             | —                            | ·33              |
| —                | —       | —                             | —                            | —                | —                                           | —       | —                             | —                            | —                |
| 23·9             | —       | —                             | —                            | 1·59             | 37·3                                        | —       | ·93                           | —                            | 3·20             |
| —                | —       | —                             | —                            | —                | 23·9                                        | —       | —                             | —                            | ·68              |
| 25·0             | —       | —                             | —                            | 1·65             | 100·7                                       | —       | ·93                           | —                            | 4·21             |
| 195·2            | 1·09    | —                             | —                            | 3·09             | 904·9                                       | 9·31    | —                             | —                            | 18·25            |
| —                | —       | —                             | —                            | —                | 4·7                                         | ·93     | —                             | —                            | ·02              |
| 61·8             | —       | —                             | —                            | 5·36             | 69·9                                        | —       | —                             | —                            | 7·21             |
| 25·9             | —       | —                             | —                            | 5·04             | 6·5                                         | —       | ·93                           | —                            | ·40              |
| 143·4            | —       | —                             | —                            | 8·32             | 178·9                                       | —       | —                             | —                            | 11·41            |
| 231·1            | —       | —                             | —                            | 18·72            | 255·3                                       | —       | ·93                           | —                            | 19·02            |
| —                | —       | —                             | —                            | —                | —                                           | —       | —                             | —                            | —                |
| 4·0              | —       | —                             | —                            | ·04              | ·9                                          | —       | —                             | —                            | —                |
| —                | —       | —                             | —                            | —                | 1·9                                         | —       | —                             | —                            | ·09              |
| 13·9             | —       | —                             | —                            | 1·25             | 29·8                                        | —       | 14·91                         | —                            | 1·96             |
| 65·7             | —       | —                             | —                            | 4·18             | 55·0                                        | —       | 1·87                          | —                            | 3·71             |
| 8·0              | 3·98    | —                             | —                            | 1·55             | 4·7                                         | 1·87    | 3·72                          | —                            | ·80              |
| 4·0              | —       | —                             | —                            | ·33              | 1·9                                         | —       | —                             | —                            | ·01              |
| 13·9             | 1·09    | —                             | —                            | ·88              | 8·4                                         | —       | —                             | —                            | ·80              |
| 4·0              | —       | —                             | —                            | ·50              | ·9                                          | —       | —                             | —                            | ·02              |
| 17·9             | —       | —                             | —                            | 1·22             | 29·8                                        | —       | 1·87                          | —                            | 1·33             |
| —                | —       | —                             | —                            | —                | 5·6                                         | —       | —                             | —                            | ·21              |
| 13·9             | —       | —                             | —                            | ·52              | 28·0                                        | 1·87    | 1·87                          | —                            | 1·57             |
| 23·9             | —       | —                             | —                            | 1·05             | 70·8                                        | 1·87    | —                             | —                            | 3·21             |
| 53·8             | —       | —                             | —                            | 2·25             | 70·8                                        | —       | —                             | —                            | 1·83             |
| 57·8             | —       | —                             | —                            | 8·53             | 70·8                                        | —       | ·93                           | —                            | 6·66             |
| 21·9             | 1·99    | —                             | —                            | 2·33             | 5·6                                         | 2·79    | —                             | —                            | ·22              |
| 129·5            | —       | —                             | —                            | 11·22            | 69·9                                        | —       | ·93                           | —                            | 3·97             |
| 13·9             | —       | —                             | —                            | 1·31             | 13·1                                        | —       | 3·72                          | —                            | 1·23             |
| 31·9             | —       | —                             | —                            | 3·15             | 29·8                                        | —       | —                             | —                            | 1·17             |
| 235·1            | —       | —                             | —                            | 12·07            | 137·0                                       | —       | ·93                           | —                            | 5·95             |
| —                | —       | —                             | —                            | —                | ·9                                          | ·93     | —                             | —                            | ·02              |
| 67·7             | —       | —                             | —                            | 1·99             | 99·7                                        | 1·87    | —                             | —                            | 3·54             |
| 6·0              | —       | —                             | —                            | ·42              | 7·5                                         | ·93     | —                             | —                            | ·03              |
| 8·0              | —       | —                             | —                            | ·80              | ·9                                          | —       | —                             | —                            | —                |
| —                | —       | —                             | —                            | —                | —                                           | —       | —                             | —                            | —                |
| 1247·0           | 9·96    | —                             | —                            | 79·10            | 2009·3                                      | 22·37   | 32·61                         | —                            | 79·33            |
| 1582·2           | 19·92   | 10·96                         | 11·69                        | 67·08            | —                                           | —       | —                             | —                            | —                |

for the three years 1886 to 1888 will be given in the Report for 1889; those for the four years for 1890 &c., &c.



**ABSTRACT No. X.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS among the TROOPS stationed in SOUTH AFRICA and at ST. HELENA average Ratios for 10 Years.\***

| Average Strength 3,717.                         |                                  | Admissions into Hospital. | Deaths.           |              |        | Invalids.         |                                          | Average Number constantly Sick. |
|-------------------------------------------------|----------------------------------|---------------------------|-------------------|--------------|--------|-------------------|------------------------------------------|---------------------------------|
| Diseases.                                       |                                  |                           | In the Com- mand. | Of Invalids. | Total. | Number sent Home. | Number finally dis- charged the Service. |                                 |
| I.—GENERAL DISEASES.                            |                                  |                           |                   |              |        |                   |                                          |                                 |
| GROUP "A."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.                                    | Small-pox . . . . .              | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Other Eruptive Fevers . . . . .  | 5                         | —                 | —            | —      | —                 | —                                        | ·36                             |
|                                                 | Enteric Fever . . . . .          | 16                        | 2                 | —            | 2      | —                 | —                                        | 1·18                            |
|                                                 | Other Continued Fevers . . . . . | 75                        | 1                 | —            | 1      | —                 | —                                        | 2·77                            |
|                                                 | Yellow Fever . . . . .           | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Cholera . . . . .                | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Dysentery . . . . .              | 30                        | —                 | —            | —      | —                 | —                                        | 2·72                            |
|                                                 | Other Diseases . . . . .         | 2                         | —                 | —            | —      | —                 | —                                        | ·06                             |
| Total . . . . .                                 |                                  | 123                       | 3                 | —            | 3      | —                 | —                                        | 8·00                            |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 35                        | 1                 | —            | 1      | —                 | —                                        | 1·28                            |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | 10                        | —                 | —            | —      | —                 | —                                        | ·36                             |
| Sub-Group IV.                                   | Syphilis, Primary . . . . .      | 276                       | —                 | —            | —      | —                 | —                                        | 23·46                           |
|                                                 | Secondary . . . . .              | 351                       | 2                 | —            | 2      | 17                | 4                                        | 26·85                           |
|                                                 | Gonorrhoea . . . . .             | 410                       | —                 | —            | —      | 2                 | —                                        | 25·81                           |
| Total . . . . .                                 |                                  | 1,037                     | 2                 | —            | 2      | 19                | 4                                        | 76·14                           |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| GROUP "B."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | 6                         | —                 | —            | —      | —                 | 3                                        | ·14                             |
| Sub-Group II.                                   | Scurvy . . . . .                 | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Alcoholism . . . . .             | 10                        | —                 | —            | —      | —                 | —                                        | ·32                             |
| GROUP "C."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Debility, &c. . . . .                           |                                  | 50                        | —                 | —            | —      | 9                 | 6                                        | 5·00                            |
| GROUP "D."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Rheumatism . . . . .                            |                                  | 225                       | —                 | —            | —      | 12                | 5                                        | 17·08                           |
| Tubercular Diseases . . . . .                   |                                  | 9                         | 4                 | 1            | 5      | 9                 | 5                                        | 1·53                            |
| Other Diseases . . . . .                        |                                  | 21                        | —                 | —            | —      | 5                 | 2                                        | 1·89                            |
| II.—LOCAL DISEASES.                             |                                  |                           |                   |              |        |                   |                                          |                                 |
| Diseases of the—                                |                                  |                           |                   |              |        |                   |                                          |                                 |
| 1. Nervous System { Nervous Diseases . . . . .  |                                  | 46                        | 2                 | 2            | 3      | 7                 | 4                                        | 2·50                            |
| Mental . . . . .                                |                                  | 6                         | —                 | —            | —      | 4                 | 1                                        | ·90                             |
| 2. Eye . . . . .                                |                                  | 83                        | —                 | —            | —      | 5                 | 4                                        | 5·43                            |
| 3 & 4. Other Organs of Special Senses . . . . . |                                  | 35                        | —                 | —            | —      | —                 | 1                                        | 1·55                            |
| 5. Circulatory System . . . . .                 |                                  | 47                        | —                 | —            | —      | 24                | 10                                       | 5·79                            |
| 6. Respiratory " . . . . .                      |                                  | 82                        | 3                 | 1            | 4      | 10                | 4                                        | 6·87                            |
| 7. Digestive " . . . . .                        |                                  | 270                       | 3                 | —            | 3      | 6                 | 2                                        | 10·86                           |
| 8. Lymphatic and Glandular System . . . . .     |                                  | 201                       | —                 | —            | —      | 1                 | 1                                        | 20·16                           |
| 9. Urinary System . . . . .                     |                                  | 14                        | 2                 | —            | 1      | 3                 | 1                                        | ·64                             |
| 10. Generative " . . . . .                      |                                  | 303                       | —                 | —            | —      | 4                 | 3                                        | 30·46                           |
| 11. Organs of Locomotion . . . . .              |                                  | 32                        | —                 | —            | —      | 1                 | —                                        | 2·30                            |
| 12. Connective Tissue . . . . .                 |                                  | 87                        | —                 | —            | —      | —                 | —                                        | 3·92                            |
| 13. Skin . . . . .                              |                                  | 201                       | —                 | —            | —      | 1                 | —                                        | 8·24                            |
| III.—POISONS . . . . .                          |                                  |                           |                   |              |        |                   |                                          |                                 |
| IV.—INJURIES.                                   |                                  |                           |                   |              |        |                   |                                          |                                 |
| 1. General . . . . .                            |                                  | 10                        | 4                 | —            | 4      | 1                 | —                                        | ·68                             |
| 2. Local . . . . .                              |                                  | 325                       | 1                 | —            | 1      | 10                | 4                                        | 14·97                           |
| 3. In Action . . . . .                          |                                  | —                         | 2                 | —            | 2      | —                 | —                                        | —                               |
| No appreciable disease . . . . .                |                                  | 7                         | —                 | —            | —      | —                 | —                                        | ·48                             |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| General Total . . . . .                         |                                  | 3,277                     | 25                | 4            | 29     | 131               | 60                                       | 217·68                          |
| * Average of 10 years, 1878-87 . . . . .        |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |

† The average ratios for 10 years will be given in future years. The average ratios for 1896 to 1899 in

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK during the Year 1888, with the Ratios per 1,000 of the Strength, and the

| Ratio per 1,000. |         |                     |                              |                  | Average Ratio per 1,000 from 1886 to 1887.† |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|---------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 1'3              | —       | —                   | —                            | 10               | 5                                           | —       | —                   | —                            | 03               |
| 2'7              | 54      | —                   | —                            | 32               | 2'5                                         | 1'07    | —                   | —                            | 28               |
| 20'2             | 27      | —                   | —                            | 1'01             | 28'0                                        | —       | —                   | —                            | 1'14             |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 8'1              | —       | —                   | —                            | 73               | 5'4                                         | 13      | 81                  | 13                           | 52               |
| 5                | —       | —                   | —                            | 02               | —                                           | —       | —                   | —                            | —                |
| 32'8             | 81      | —                   | —                            | 2'18             | 36'4                                        | 1'20    | 81                  | 13                           | 1'97             |
| 9'4              | 27      | —                   | —                            | 34               | 8'2                                         | —       | 13                  | —                            | 32               |
| 2'7              | —       | —                   | —                            | 10               | 1'5                                         | —       | —                   | —                            | 05               |
| 74'3             | —       | —                   | —                            | 6'32             | 135'4                                       | —       | —                   | —                            | 10'61            |
| 94'4             | 54      | 4'57                | 1'07                         | 7'22             | 52'1                                        | 27      | 1'07                | 67                           | 4'14             |
| 110'3            | —       | 54                  | —                            | 6'94             | 105'5                                       | —       | 13                  | —                            | 7'17             |
| 279'0            | 54      | 5'11                | 1'07                         | 20'48            | 223'0                                       | 27      | 1'21                | 67                           | 21'92            |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 1'6              | —       | —                   | 81                           | 04               | 1'1                                         | —       | —                   | —                            | 01               |
| 2'7              | —       | —                   | —                            | 00               | 4'1                                         | —       | —                   | —                            | 06               |
| 13'5             | —       | 2'42                | 1'61                         | 1'34             | 19'0                                        | —       | 4'96                | 1'68                         | 1'54             |
| 60'5             | —       | 3'23                | 1'35                         | 4'60             | 40'3                                        | —       | 1'88                | 67                           | 2'96             |
| 2'4              | 1'34    | 2'42                | 1'35                         | 41               | 2'9                                         | 54      | 67                  | 81                           | 47               |
| 5'7              | —       | 1'35                | 54                           | 51               | 4'3                                         | —       | 13                  | 13                           | 21               |
| 12'4             | 81      | 1'88                | 1'07                         | 67               | 5'5                                         | 27      | 1'07                | 81                           | 42               |
| 1'6              | —       | 1'07                | 27                           | 24               | 1'1                                         | 13      | 94                  | 1'07                         | 21               |
| 22'3             | —       | 1'35                | 1'07                         | 1'46             | 18'0                                        | —       | 1'61                | 1'61                         | 1'46             |
| 9'4              | —       | —                   | 27                           | 42               | 2'8                                         | 13      | 40                  | 54                           | 21               |
| 12'6             | —       | 6'46                | 2'69                         | 1'56             | 11'7                                        | 27      | 3'75                | 2'14                         | 1'36             |
| 22'1             | 1'07    | 2'69                | 1'07                         | 1'85             | 16'3                                        | 67      | 54                  | 40                           | 1'06             |
| 74'6             | 81      | 1'61                | 54                           | 2'92             | 79'5                                        | 54      | 1'07                | 40                           | 2'62             |
| 54'1             | —       | 27                  | 27                           | 5'42             | 50'7                                        | —       | 13                  | 13                           | 4'77             |
| 3'8              | 27      | 81                  | 27                           | 17               | 5'5                                         | 13      | 54                  | —                            | 31               |
| 81'5             | —       | 1'07                | 81                           | 5'50             | 59'9                                        | —       | —                   | —                            | 3'56             |
| 8'6              | —       | 27                  | —                            | 62               | 6'2                                         | —       | 81                  | 81                           | 51               |
| 23'4             | —       | —                   | —                            | 1'05             | 26'0                                        | —       | 13                  | —                            | 1'28             |
| 51'9             | —       | 27                  | —                            | 2'22             | 51'6                                        | —       | —                   | —                            | 2'22             |
| —                | —       | —                   | —                            | —                | 1                                           | —       | —                   | —                            | —                |
| 2'7              | 1'07    | 27                  | —                            | 18               | 1'9                                         | 1'07    | 13                  | 13                           | 06               |
| 67'4             | 27      | 2'69                | 1'07                         | 4'03             | 96'4                                        | 81      | 1'07                | 94                           | 4'20             |
| —                | 54      | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 1'9              | —       | —                   | —                            | 13               | 1'5                                         | —       | —                   | —                            | 03               |
| —                | —       | —                   | —                            | —                | —                                           | —       | —                   | —                            | —                |
| 881'6            | 7'80    | 35'24               | 16'14                        | 58'63            | 845'5                                       | 6'03    | 21'96               | 13'27                        | 53'70            |
| 833'8            | 38'12   | 58'96               | 22'19                        | 52'01            | —                                           | —       | —                   | —                            | —                |

the three years 1886 to 1888 will be given in the Report for 1889; those for the four years that for 1890, &c., &c.

ABSTRACT No. XI.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS among the TROOPS stationed at MAURITIUS during the Year 1883, with

| Average Strength, 405.                |                        | Admissions into Hospital. | Deaths.           |              |        | Invalids.         |                                          | Average Number Constantly Sick. |
|---------------------------------------|------------------------|---------------------------|-------------------|--------------|--------|-------------------|------------------------------------------|---------------------------------|
| Diseases.                             |                        |                           | In the Com- mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis- charged the Service. |                                 |
| I.—GENERAL DISEASES.                  |                        |                           |                   |              |        |                   |                                          |                                 |
| GROUP "A."                            |                        |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.                          | Small-pox              | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Other Eruptive Fevers  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Enteric Fever          | 3                         | 1                 | —            | 1      | —                 | —                                        | ·07                             |
|                                       | Other Continued Fevers | 1                         | 1                 | —            | 1      | —                 | —                                        | ·01                             |
|                                       | Yellow Fever           | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Cholera                | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Dysentery              | 3                         | —                 | —            | —      | —                 | —                                        | ·20                             |
| Other Diseases                        |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| Total                                 |                        | 6                         | 2                 | —            | 2      | —                 | —                                        | ·28                             |
| Sub-Group II.—Malarial Fevers         |                        | 179                       | 2                 | —            | 2      | 9                 | —                                        | 6·53                            |
| Sub-Group III.—Septic Diseases        |                        | 2                         | 1                 | —            | 1      | —                 | —                                        | ·08                             |
| Sub-Group IV.                         | Syphilis, Primary      | 27                        | —                 | —            | —      | —                 | —                                        | 1·58                            |
|                                       | Secondary              | 18                        | —                 | —            | —      | 1                 | —                                        | 1·60                            |
|                                       | Gonorrhoea             | 36                        | —                 | —            | —      | —                 | —                                        | 2·15                            |
| Total                                 |                        | 81                        | —                 | —            | —      | 1                 | —                                        | 5·33                            |
| Sub-Group V.—Hydrophobia, &c.         |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| GROUP "B."                            |                        |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.—Parasitic Diseases       |                        | 2                         | —                 | —            | —      | —                 | 1                                        | ·05                             |
| Sub-Group II.                         | Scurvy                 | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                       | Alcoholism             | 1                         | —                 | —            | —      | —                 | —                                        | ·02                             |
| GROUP "C."                            |                        |                           |                   |              |        |                   |                                          |                                 |
| Debility, &c.                         |                        | 5                         | —                 | —            | —      | 3                 | 1                                        | ·10                             |
| GROUP "D."                            |                        |                           |                   |              |        |                   |                                          |                                 |
| Rheumatism                            |                        | 13                        | —                 | —            | —      | —                 | —                                        | ·48                             |
| Tubercular Diseases                   |                        | 1                         | —                 | —            | —      | 1                 | 1                                        | ·23                             |
| Other Diseases                        |                        | 1                         | —                 | —            | —      | —                 | —                                        | ·02                             |
| II.—LOCAL DISEASES.                   |                        |                           |                   |              |        |                   |                                          |                                 |
| Diseases of the—                      |                        |                           |                   |              |        |                   |                                          |                                 |
| 1. Nervous System { Nervous Diseases  |                        | 1                         | —                 | —            | —      | —                 | —                                        | ·06                             |
| Mental " "                            |                        | 1                         | —                 | —            | —      | 1                 | 2                                        | ·31                             |
| 2. Eye                                |                        | 2                         | —                 | —            | —      | —                 | 1                                        | ·07                             |
| 3 & 4. Other Organs of Special Senses |                        | 1                         | —                 | —            | —      | —                 | —                                        | ·06                             |
| 5. Circulatory System                 |                        | 3                         | —                 | —            | —      | 3                 | 1                                        | ·49                             |
| 6. Respiratory "                      |                        | 5                         | —                 | —            | —      | 1                 | —                                        | ·56                             |
| 7. Digestive "                        |                        | 21                        | —                 | —            | —      | 1                 | —                                        | 1·19                            |
| 8. Lymphatic and Glandular System     |                        | 9                         | —                 | —            | —      | —                 | —                                        | 1·48                            |
| 9. Urinary System                     |                        | 3                         | —                 | —            | —      | 3                 | 1                                        | ·23                             |
| 10. Generative "                      |                        | 27                        | —                 | —            | —      | —                 | —                                        | 1·49                            |
| 11. Organs of Locomotion              |                        | 1                         | —                 | —            | —      | —                 | —                                        | ·04                             |
| 12. Connective Tissue                 |                        | 6                         | —                 | —            | —      | —                 | —                                        | ·63                             |
| 13. Skin                              |                        | 10                        | —                 | —            | —      | —                 | —                                        | ·55                             |
| III.—POISONS.                         |                        |                           |                   |              |        |                   |                                          |                                 |
| IV.—INJURIES.                         |                        |                           |                   |              |        |                   |                                          |                                 |
| 1. General                            |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| 2. Local                              |                        | 18                        | —                 | —            | —      | —                 | —                                        | ·63                             |
| 3. In Action                          |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| No appreciable disease                |                        | 1                         | —                 | —            | —      | —                 | —                                        | ·05                             |
| Cause unknown (refers to deaths only) |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| General Total                         |                        | 400                       | 5                 | —            | 5      | 23                | 8                                        | 21·33                           |
| * Average of 10 years, 1878-87        |                        | —                         | —                 | —            | —      | —                 | —                                        | —                               |

† The average ratios for 10 years will be given in future years. The average ratios for 1886 to 1889 in that

into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK  
the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                           |                                         |                          | Average Ratio per 1,000, from 1886 to 1887.† |         |                                |                                         |                          |
|------------------|---------|---------------------------|-----------------------------------------|--------------------------|----------------------------------------------|---------|--------------------------------|-----------------------------------------|--------------------------|
| Admis-<br>sions. | Deaths. | Invalids<br>sent<br>Home. | Invalids<br>finally<br>Dis-<br>charged. | Con-<br>stantly<br>Sick. | Admis-<br>sions.                             | Deaths. | In-<br>valids<br>sent<br>Home. | Invalids<br>finally<br>Dis-<br>charged. | Con-<br>stantly<br>Sick. |
| —                | —       | —                         | —                                       | —                        | —                                            | —       | —                              | —                                       | —                        |
| 4·9              | 2·47    | —                         | —                                       | ·17                      | 3·7                                          | 2·46    | —                              | —                                       | ·11                      |
| 2·5              | 2·47    | —                         | —                                       | ·03                      | 8·6                                          | 3·68    | —                              | —                                       | ·49                      |
| —                | —       | —                         | —                                       | —                        | —                                            | —       | —                              | —                                       | —                        |
| 7·               | —       | —                         | —                                       | ·40                      | 76·2                                         | 3·68    | —                              | —                                       | 4·12                     |
| —                | —       | —                         | —                                       | —                        | —                                            | —       | —                              | —                                       | —                        |
| 14·8             | 4·94    | —                         | —                                       | ·69                      | 88·5                                         | 9·82    | —                              | —                                       | 4·72                     |
| 412·0            | 4·94    | 22·22                     | —                                       | 16·12                    | 519·6                                        | 4·91    | —                              | —                                       | 18·85                    |
| 4·9              | 2·47    | —                         | —                                       | ·20                      | 2·4                                          | —       | —                              | —                                       | ·09                      |
| 66·7             | —       | —                         | —                                       | 3·90                     | 49·1                                         | —       | —                              | —                                       | 3·80                     |
| 44·4             | —       | 2·47                      | —                                       | 3·95                     | 27·0                                         | —       | 2·40                           | 1·23                                    | 3·17                     |
| 88·9             | —       | —                         | —                                       | 5·31                     | 136·4                                        | —       | —                              | —                                       | 6·46                     |
| 200·0            | —       | 2·47                      | —                                       | 13·16                    | 212·5                                        | —       | 2·46                           | 1·23                                    | 15·43                    |
| —                | —       | —                         | —                                       | —                        | —                                            | —       | —                              | —                                       | —                        |
| 4·9              | —       | —                         | 2·47                                    | ·12                      | 1·2                                          | —       | —                              | —                                       | ·04                      |
| —                | —       | —                         | —                                       | —                        | 1·2                                          | —       | —                              | —                                       | ·06                      |
| 2·5              | —       | —                         | —                                       | ·05                      | 11·1                                         | —       | —                              | —                                       | ·28                      |
| 12·3             | —       | 7·41                      | 2·47                                    | ·25                      | 38·1                                         | —       | 24·57                          | 3·08                                    | 2·33                     |
| 32·1             | —       | —                         | —                                       | 1·19                     | 27·0                                         | —       | 1·23                           | 1·23                                    | 1·57                     |
| 2·5              | —       | 2·47                      | 2·47                                    | ·57                      | 3·7                                          | —       | 3·68                           | 3·68                                    | ·17                      |
| 2·5              | —       | —                         | —                                       | ·05                      | 3·7                                          | —       | —                              | —                                       | ·18                      |
| 2·5              | —       | —                         | —                                       | ·15                      | 12·3                                         | 1·23    | 2·46                           | 1·23                                    | ·65                      |
| 2·5              | —       | 2·47                      | 4·94                                    | ·77                      | 7·4                                          | —       | 4·01                           | 4·91                                    | 1·27                     |
| 4·9              | —       | —                         | 2·47                                    | ·17                      | 12·3                                         | —       | 1·23                           | 1·23                                    | 1·18                     |
| 2·5              | —       | —                         | —                                       | ·20                      | 9·8                                          | —       | 1·23                           | —                                       | ·64                      |
| 7·4              | —       | 7·41                      | 2·47                                    | 1·21                     | 33·2                                         | —       | 7·37                           | 4·91                                    | 2·30                     |
| 12·3             | —       | 2·47                      | —                                       | 1·38                     | 24·0                                         | —       | 1·23                           | 2·46                                    | 1·46                     |
| 51·9             | —       | 2·47                      | —                                       | 2·94                     | 131·5                                        | 2·46    | 1·23                           | —                                       | 4·96                     |
| 22·2             | —       | —                         | —                                       | 3·65                     | 60·2                                         | —       | —                              | —                                       | 6·11                     |
| 7·4              | —       | 7·41                      | 2·47                                    | ·69                      | 7·4                                          | —       | —                              | —                                       | ·60                      |
| 66·7             | —       | —                         | —                                       | 3·68                     | 79·9                                         | —       | —                              | 1·23                                    | 5·15                     |
| 2·5              | —       | —                         | —                                       | ·10                      | 2·4                                          | —       | —                              | —                                       | ·27                      |
| 14·8             | —       | —                         | —                                       | 1·55                     | 23·3                                         | —       | —                              | —                                       | ·61                      |
| 24·7             | —       | —                         | —                                       | 1·36                     | 68·8                                         | —       | —                              | —                                       | 4·05                     |
| —                | —       | —                         | —                                       | —                        | —                                            | 1·23    | —                              | —                                       | —                        |
| 44·4             | —       | —                         | —                                       | 2·30                     | 31·5                                         | 1·23    | —                              | —                                       | 6·26                     |
| —                | —       | —                         | —                                       | —                        | —                                            | —       | —                              | —                                       | —                        |
| 2·5              | —       | —                         | —                                       | ·12                      | 2·4                                          | —       | —                              | —                                       | ·04                      |
| —                | —       | —                         | —                                       | —                        | —                                            | —       | —                              | —                                       | —                        |
| 987·7            | 12·35   | 56·79                     | 19·75                                   | 52·67                    | 1516·0                                       | 20·88   | 51·60                          | 25·79                                   | 79·27                    |
| 2218·1           | 18·77   | 50·24                     | 18·51                                   | 88·58                    | —                                            | —       | —                              | —                                       | —                        |

the three years 1886 to 1888 will be given in the Report for 1889; those for the four years  
for 1890, &c., &c.

ABSTRACT No. XII.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS the Troops stationed at CEYLON during the Year 1888, with the Ratios

| Average Strength, 1,183.                        |                                  | Admissions into Hospital. | Deaths.           |              |        | Invalids.         |                                          | Average Number Constantly Sick. |
|-------------------------------------------------|----------------------------------|---------------------------|-------------------|--------------|--------|-------------------|------------------------------------------|---------------------------------|
| Diseases.                                       |                                  |                           | In the Com- mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis- charged the Service. |                                 |
| I.—GENERAL DISEASES.                            |                                  |                           |                   |              |        |                   |                                          |                                 |
| GROUP "A."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.                                    | Small-pox . . . . .              | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Other Eruptive Fevers . . . . .  | 1                         | —                 | —            | —      | —                 | —                                        | '03                             |
|                                                 | Enteric Fever . . . . .          | 19                        | 7                 | —            | 7      | —                 | —                                        | 1'06                            |
|                                                 | Other Continued Fevers . . . . . | 130                       | —                 | —            | —      | —                 | —                                        | 4'09                            |
|                                                 | Yellow Fever . . . . .           | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Cholera . . . . .                | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Dysentery . . . . .              | 39                        | 1                 | —            | 1      | 2                 | —                                        | 3'19                            |
| Other Diseases . . . . .                        |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| Total . . . . .                                 |                                  | 189                       | 8                 | —            | 8      | 2                 | —                                        | 8'97                            |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 5                         | —                 | —            | —      | —                 | —                                        | '45                             |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | 2                         | —                 | —            | —      | —                 | —                                        | '02                             |
| Sub-Group IV.                                   | Syphilis, Primary . . . . .      | 36                        | —                 | —            | —      | —                 | —                                        | 2'60                            |
|                                                 | " Secondary . . . . .            | 51                        | —                 | —            | —      | 1                 | 1                                        | 4'00                            |
|                                                 | Gonorrhoea . . . . .             | 134                       | —                 | —            | —      | —                 | —                                        | 6'51                            |
| Total . . . . .                                 |                                  | 221                       | —                 | —            | —      | 1                 | 1                                        | 13'11                           |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| GROUP "B."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | 1                         | —                 | —            | —      | —                 | —                                        | '01                             |
| Sub-Group II.                                   | Scurvy . . . . .                 | —                         | —                 | —            | —      | —                 | —                                        | —                               |
|                                                 | Alcoholism . . . . .             | 2                         | —                 | —            | —      | —                 | —                                        | '07                             |
| GROUP "C."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Debility, &c. . . . .                           |                                  | 9                         | —                 | —            | —      | 2                 | 1                                        | '18                             |
| GROUP "D."                                      |                                  |                           |                   |              |        |                   |                                          |                                 |
| Rheumatism . . . . .                            |                                  | 26                        | —                 | —            | —      | —                 | —                                        | 1'73                            |
| Tubercular Diseases . . . . .                   |                                  | 6                         | 2                 | —            | 2      | —                 | —                                        | 1'16                            |
| Other Diseases . . . . .                        |                                  | 12                        | —                 | —            | —      | —                 | —                                        | '86                             |
| II.—LOCAL DISEASES.                             |                                  |                           |                   |              |        |                   |                                          |                                 |
| Diseases of the—                                |                                  |                           |                   |              |        |                   |                                          |                                 |
| 1. Nervous System { Nervous Diseases . . . . .  | { Mental . . . . .               | 16                        | —                 | —            | —      | 3                 | 2                                        | 1'12                            |
|                                                 |                                  | 1                         | —                 | —            | —      | 1                 | 1                                        | '43                             |
|                                                 |                                  | 4                         | —                 | —            | —      | 1                 | 1                                        | '08                             |
|                                                 |                                  | 29                        | —                 | —            | —      | —                 | —                                        | 1'31                            |
|                                                 |                                  | 14                        | —                 | —            | —      | 3                 | 2                                        | 2'15                            |
|                                                 |                                  | 24                        | 1                 | —            | 1      | 1                 | —                                        | 1'94                            |
|                                                 |                                  | 111                       | 6                 | —            | 6      | 1                 | —                                        | 4'58                            |
|                                                 |                                  | 105                       | —                 | —            | —      | —                 | —                                        | 10'19                           |
|                                                 |                                  | 12                        | —                 | —            | —      | 2                 | 1                                        | '72                             |
|                                                 |                                  | 210                       | —                 | —            | —      | 1                 | —                                        | 13'23                           |
|                                                 |                                  | 7                         | —                 | —            | —      | 1                 | 1                                        | '46                             |
|                                                 |                                  | 19                        | —                 | —            | —      | —                 | —                                        | '97                             |
|                                                 |                                  | 81                        | —                 | —            | —      | —                 | —                                        | 4'02                            |
| III.—POISONS.                                   |                                  |                           |                   |              |        |                   |                                          |                                 |
| IV.—INJURIES.                                   |                                  |                           |                   |              |        |                   |                                          |                                 |
| 1. General . . . . .                            |                                  | —                         | 1                 | —            | 1      | —                 | —                                        | —                               |
| 2. Local . . . . .                              |                                  | 164                       | —                 | —            | —      | —                 | —                                        | 4'85                            |
| 3. In Action . . . . .                          |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| No appreciable disease . . . . .                |                                  | 5                         | —                 | —            | —      | —                 | —                                        | '06                             |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |
| General Total . . . . .                         |                                  | 1,265                     | 18                | —            | 18     | 19                | 10                                       | 72'72                           |
| * Average of 10 years 1878-87 . . . . .         |                                  | —                         | —                 | —            | —      | —                 | —                                        | —                               |

† The average ratios for 10 years will be given in future years. The average ratios four years 1886 to 1889



ABSTRACT No. XIII.—TABLE showing the AVERAGE STRENGTH, ADMIS-  
among the TROOPS stationed in CHINA and the STRAITS SETTLEMENTS  
Average Ratios for 10 years.\*

| Average Strength, 2,329.              |                                       | Admissions into Hospital. | Deaths.          |              |        | Invalids.         |                                         | Average Number constantly Sick. |
|---------------------------------------|---------------------------------------|---------------------------|------------------|--------------|--------|-------------------|-----------------------------------------|---------------------------------|
| Diseases.                             |                                       |                           | In the Com-mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis-charged the Service. |                                 |
| I.—GENERAL DISEASES.                  |                                       |                           |                  |              |        |                   |                                         |                                 |
| GROUP "A."                            |                                       |                           |                  |              |        |                   |                                         |                                 |
| Sub-Group I.                          | Small-pox                             | 3                         | —                | —            | —      | —                 | —                                       | ·26                             |
|                                       | Other Eruptive Fevers                 | —                         | —                | —            | —      | —                 | —                                       | ·44                             |
|                                       | Enteric Fever                         | —                         | —                | —            | —      | —                 | —                                       | 2·58                            |
|                                       | Other Continued Fevers                | 69                        | —                | —            | —      | —                 | —                                       | —                               |
|                                       | Yellow Fever                          | —                         | —                | —            | —      | —                 | —                                       | ·01                             |
|                                       | Cholera                               | 1                         | 1                | —            | 1      | —                 | —                                       | 2·09                            |
|                                       | Dysentery                             | 30                        | 1                | —            | 1      | 1                 | —                                       | ·03                             |
| Other Diseases                        |                                       | —                         | —                | —            | —      | —                 | —                                       | —                               |
| Total                                 |                                       | 103                       | 2                | —            | 2      | 1                 | —                                       | 5·41                            |
| Sub-Group II.—Malarial Fevers         |                                       | 547                       | 7                | —            | 7      | 9                 | —                                       | 15·79                           |
| Sub-Group III.—Septic Diseases        |                                       | 1                         | —                | —            | —      | —                 | —                                       | ·04                             |
| Sub-Group IV.                         | Syphilis, Primary                     | 62                        | —                | —            | —      | —                 | —                                       | 5·58                            |
|                                       | " Secondary                           | 85                        | —                | —            | —      | 1                 | —                                       | 7·58                            |
|                                       | Gonorrhoea                            | 366                       | —                | —            | —      | —                 | —                                       | 23·87                           |
| Total                                 |                                       | 513                       | —                | —            | —      | 1                 | —                                       | 37·03                           |
| Sub-Group V.—Hydrophobia, &c.         |                                       | 1                         | 1                | —            | 1      | —                 | —                                       | —                               |
| GROUP "B."                            |                                       |                           |                  |              |        |                   |                                         |                                 |
| Sub-Group I.—Parasitic Diseases       |                                       | 12                        | —                | —            | —      | —                 | —                                       | ·20                             |
| Sub-Group II.                         | Scurvy                                | —                         | —                | —            | —      | —                 | —                                       | —                               |
|                                       | Alcoholism                            | 14                        | —                | —            | —      | —                 | —                                       | ·46                             |
| GROUP "C."                            |                                       |                           |                  |              |        |                   |                                         |                                 |
| Debility, &c.                         |                                       | 59                        | —                | —            | —      | 5                 | 3                                       | 7·67                            |
| GROUP "D."                            |                                       |                           |                  |              |        |                   |                                         |                                 |
| Rheumatism                            |                                       | 37                        | —                | —            | —      | —                 | —                                       | 2·29                            |
| Tubercular Diseases                   |                                       | 7                         | 2                | 2            | 4      | 7                 | 4                                       | 1·26                            |
| Other Diseases                        |                                       | 18                        | 1                | —            | 1      | —                 | —                                       | 1·30                            |
| II.—LOCAL DISEASES.                   |                                       |                           |                  |              |        |                   |                                         |                                 |
| Diseases of the—                      |                                       |                           |                  |              |        |                   |                                         |                                 |
| 1. Nervous System                     | { Nervous Diseases                    | 11                        | 1                | —            | 1      | 1                 | —                                       | ·83                             |
|                                       | { Mental " "                          | 2                         | —                | —            | —      | 1                 | 1                                       | ·76                             |
|                                       | 2. Eye                                | 22                        | —                | —            | —      | 3                 | 2                                       | 1·58                            |
|                                       | 3 & 4. Other Organs of Special Senses | 45                        | —                | —            | —      | 1                 | 2                                       | 1·82                            |
|                                       | 5. Circulatory System                 | 18                        | —                | —            | —      | 3                 | 2                                       | 2·95                            |
|                                       | 6. Respiratory " "                    | 47                        | 1                | —            | 1      | 3                 | 2                                       | 2·78                            |
|                                       | 7. Digestive " "                      | 199                       | 1                | —            | 1      | 2                 | 1                                       | 9·45                            |
|                                       | 8. Lymphatic and Glandular System     | 57                        | —                | —            | —      | 1                 | —                                       | 5·67                            |
|                                       | 9. Urinary System                     | 12                        | —                | —            | —      | —                 | —                                       | 1·74                            |
|                                       | 10. Generative " "                    | 384                       | —                | —            | —      | —                 | —                                       | 26·02                           |
|                                       | 11. Organs of Locomotion              | 29                        | —                | —            | —      | —                 | —                                       | 2·30                            |
|                                       | 12. Connective Tissue                 | 60                        | —                | —            | —      | 1                 | 1                                       | 2·66                            |
|                                       | 13. Skin                              | 150                       | —                | —            | —      | —                 | —                                       | 7·56                            |
| III.—POISONS                          |                                       | 1                         | —                | —            | —      | —                 | —                                       | ·01                             |
| IV.—INJURIES.                         |                                       |                           |                  |              |        |                   |                                         |                                 |
| 1. General                            |                                       | 10                        | 5                | —            | 5      | —                 | —                                       | 1·25                            |
| 2. Local                              |                                       | 273                       | 4                | —            | 4      | 1                 | 1                                       | 11·13                           |
| 3. In Action                          |                                       | —                         | —                | —            | —      | —                 | —                                       | —                               |
| No appreciable disease                |                                       | 8                         | —                | —            | —      | —                 | —                                       | ·41                             |
| Cause unknown (refers to deaths only) |                                       | —                         | —                | —            | —      | —                 | —                                       | —                               |
| General Total                         |                                       | 2,640                     | 25               | 2            | 27     | 40                | 19                                      | 150·42                          |
| *Average of 10 years, 1878-87         |                                       | —                         | —                | —            | —      | —                 | —                                       | —                               |

† The average ratios for 10 years will be given in future years. The average ratios for the 1886 to 1889 in

SIONS into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK during the Year 1888, with the Ratios per 1,000 of the Strength, and the

| Ratio per 1,000. |         |                     |                              |                  | Average Ratio per 1,000 from 1886 to 1887.† |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|---------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                 | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| 1'3              | --      | --                  | --                           | '11              | --                                          | --      | --                  | --                           | --               |
| --               | --      | --                  | --                           | '19              | 4'2                                         | 1'10    | '22                 | --                           | '57              |
| 29'6             | --      | --                  | --                           | 1'11             | 78'5                                        | '22     | --                  | --                           | 2'30             |
| --               | --      | --                  | --                           | --               | --                                          | '2      | '22                 | --                           | --               |
| '4               | '43     | --                  | --                           | '90              | 9'1                                         | '44     | '22                 | --                           | '68              |
| 12'9             | '43     | '43                 | --                           | '01              | '4                                          | --      | --                  | --                           | '01              |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 44'2             | '86     | '43                 | --                           | 2'32             | 92'4                                        | 1'98    | '44                 | --                           | 3'56             |
| 234'9            | 3'00    | 3'86                | --                           | 6'78             | 347'7                                       | '88     | '22                 | --                           | 8'54             |
| --               | --      | --                  | --                           | '01              | --                                          | --      | --                  | --                           | --               |
| '4               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 28'6             | --      | --                  | --                           | 2'40             | 31'5                                        | --      | --                  | --                           | 2'86             |
| 36'5             | --      | '43                 | --                           | 3'25             | 33'5                                        | --      | '66                 | '44                          | 2'08             |
| 157'2            | --      | --                  | --                           | 10'25            | 92'2                                        | --      | --                  | --                           | 6'31             |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 220'3            | --      | '43                 | --                           | 15'90            | 157'2                                       | --      | '66                 | '44                          | 11'20            |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| '4               | '43     | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 5'2              | --      | --                  | --                           | '09              | 4'0                                         | --      | --                  | --                           | '08              |
| --               | --      | --                  | --                           | --               | --                                          | '22     | --                  | --                           | '01              |
| 6'0              | --      | --                  | --                           | '20              | 6'4                                         | '66     | --                  | --                           | '80              |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 25'3             | --      | 2'15                | 1'29                         | 3'29             | 15'6                                        | --      | 1'99                | 1'32                         | 1'05             |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 15'9             | --      | --                  | --                           | '98              | 9'7                                         | --      | '22                 | '22                          | '48              |
| 3'0              | 1'71    | 3'00                | 1'71                         | '54              | 4'0                                         | --      | 1'54                | '88                          | '57              |
| 7'7              | '43     | --                  | --                           | '56              | 6'8                                         | --      | '22                 | '22                          | '56              |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 4'7              | '43     | '43                 | --                           | '38              | 6'6                                         | '66     | '44                 | '88                          | '33              |
| '9               | --      | '43                 | '43                          | '33              | '9                                          | '22     | '44                 | '44                          | '22              |
| 9'4              | --      | 1'29                | '86                          | '68              | 12'1                                        | --      | '44                 | '22                          | '75              |
| 19'3             | --      | '43                 | '86                          | '78              | 10'4                                        | --      | --                  | --                           | '41              |
| 7'7              | --      | 1'29                | '86                          | 1'27             | 5'5                                         | '44     | '88                 | '66                          | '42              |
| 20'2             | '43     | 1'29                | '86                          | 1'19             | 25'6                                        | '66     | '88                 | '44                          | 1'37             |
| 85'4             | '43     | '86                 | '43                          | 4'06             | 95'0                                        | '88     | 1'77                | '44                          | 3'38             |
| 24'5             | --      | '43                 | --                           | 2'43             | 18'1                                        | --      | --                  | --                           | 1'18             |
| 5'2              | --      | --                  | --                           | '75              | 3'7                                         | '22     | '44                 | '22                          | '44              |
| 164'9            | --      | --                  | --                           | 11'17            | 48'1                                        | --      | --                  | --                           | 2'43             |
| 12'5             | --      | --                  | --                           | '99              | 8'8                                         | --      | '88                 | '44                          | '55              |
| 25'8             | --      | '43                 | '43                          | 1'14             | 34'2                                        | --      | --                  | --                           | 1'47             |
| 64'4             | --      | --                  | --                           | 3'25             | 79'2                                        | --      | '44                 | --                           | 3'30             |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| '4               | --      | --                  | --                           | --               | '7                                          | --      | --                  | --                           | '02              |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 4'3              | 2'15    | --                  | --                           | '54              | 1'8                                         | 1'10    | --                  | --                           | '10              |
| 117'2            | 1'71    | '43                 | '43                          | 4'78             | 83'4                                        | '66     | '44                 | '66                          | 3'58             |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 3'4              | --      | --                  | --                           | '18              | 1'8                                         | --      | --                  | --                           | '06              |
| --               | --      | --                  | --                           | --               | --                                          | --      | --                  | --                           | --               |
| 1133'5           | 11'59   | 17'18               | 8'16                         | 64'59            | 1084'7                                      | 8'80    | 12'35               | 7'40                         | 46'35            |
| 1068'2           | 8'72    | 37'77               | 16'66                        | 50'61            | --                                          | --      | --                  | --                           | --               |

three years 1886 to 1888 will be given in the Report for 1889; those for the four years that for 1890, &c., &c.



ABSTRACT No. XIV.—TABLE showing the AVERAGE STRENGTH, ADMIS-  
SICK, among the Troops stationed in BENGAL during the Year 1888, with

| Average Strength 42,141.                        |                                  | Admissions into Hospital. | Deaths.         |              |        | Invalids.      |                                     |
|-------------------------------------------------|----------------------------------|---------------------------|-----------------|--------------|--------|----------------|-------------------------------------|
| Diseases.                                       |                                  |                           | In the Command. | Of Invalids. | Total. | No. Sent Home. | No. finally discharged the Service. |
| I.—GENERAL DISEASES.                            |                                  |                           |                 |              |        |                |                                     |
| GROUP "A."                                      |                                  |                           |                 |              |        |                |                                     |
| Sub-Group I.                                    | Small-pox . . . . .              | 78                        | 8               | —            | 8      | —              | —                                   |
|                                                 | Other Eruptive Fevers . . . . .  | 31                        | —               | —            | —      | —              | —                                   |
|                                                 | Enteric Fever . . . . .          | 686                       | 177             | —            | 177    | 4              | —                                   |
|                                                 | Other Continued Fevers . . . . . | 3,499                     | 1               | 1            | 2      | —              | —                                   |
|                                                 | Yellow Fever . . . . .           | —                         | —               | —            | —      | —              | —                                   |
|                                                 | Cholera . . . . .                | 146                       | 88              | —            | 88     | —              | —                                   |
|                                                 | Dysentery . . . . .              | 1,063                     | 21              | —            | 21     | 34             | 3                                   |
|                                                 | Other Diseases . . . . .         | 30                        | 1               | —            | 1      | —              | —                                   |
| Total . . . . .                                 |                                  | 5,533                     | 296             | 1            | 297    | 38             | 3                                   |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 14,559                    | 14              | 1            | 15     | 59             | 10                                  |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | 74                        | 5               | —            | 5      | —              | —                                   |
| Sub-Group IV.                                   | Syphilis, Primary . . . . .      | 2,987                     | —               | —            | —      | —              | —                                   |
|                                                 | " " Secondary . . . . .          | 1,297                     | 2               | 1            | 3      | 40             | 27                                  |
|                                                 | Gonorrhoea . . . . .             | 7,689                     | —               | —            | —      | —              | —                                   |
| Total . . . . .                                 |                                  | 11,973                    | 2               | 1            | 3      | 40             | 27                                  |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                         | —               | —            | —      | —              | —                                   |
| GROUP "B."                                      |                                  |                           |                 |              |        |                |                                     |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | 123                       | —               | —            | —      | —              | —                                   |
| Sub-Group II.                                   | Scurvy . . . . .                 | 41                        | 1               | —            | 1      | —              | —                                   |
|                                                 | Alcoholism . . . . .             | 567                       | 2               | —            | 2      | —              | —                                   |
| GROUP "C."                                      |                                  |                           |                 |              |        |                |                                     |
| Debility, &c. . . . .                           |                                  | 940                       | 1               | —            | 1      | 133            | 46                                  |
| GROUP "D."                                      |                                  |                           |                 |              |        |                |                                     |
| Rheumatism . . . . .                            |                                  | 1,264                     | 3               | 1            | 4      | 32             | 14                                  |
| Tubercular Diseases . . . . .                   |                                  | 138                       | 30              | 4            | 34     | 55             | 46                                  |
| Other Diseases . . . . .                        |                                  | 527                       | 10              | 1            | 11     | 16             | 6                                   |
| II.—LOCAL DISEASES.                             |                                  |                           |                 |              |        |                |                                     |
| Diseases of the—                                |                                  |                           |                 |              |        |                |                                     |
| 1. Nervous System { Nervous Diseases . . . . .  |                                  | 415                       | 20              | —            | 20     | 45             | 36                                  |
| { Mental . . . . .                              |                                  | 55                        | —               | —            | —      | 53             | 52                                  |
| 2. Eye . . . . .                                |                                  | 596                       | —               | —            | —      | 22             | 22                                  |
| 3 & 4. Other Organs of Special Senses . . . . . |                                  | 533                       | 1               | —            | 1      | 25             | 20                                  |
| 5. Circulatory System . . . . .                 |                                  | 482                       | 11              | —            | 11     | 99             | 77                                  |
| 6. Respiratory . . . . .                        |                                  | 1,581                     | 47              | 1            | 48     | 21             | 11                                  |
| 7. Digestive . . . . .                          |                                  | 5,741                     | 79              | 2            | 81     | 76             | 28                                  |
| 8. Lymphatic and Glandular System . . . . .     |                                  | 848                       | 1               | 1            | 2      | 38             | 11                                  |
| 9. Urinary System . . . . .                     |                                  | 92                        | 7               | —            | 7      | 14             | 8                                   |
| 10. Generative . . . . .                        |                                  | 4,047                     | 1               | —            | 1      | 9              | 8                                   |
| 11. Organs of Locomotion . . . . .              |                                  | 298                       | 1               | 3            | 4      | 33             | 27                                  |
| 12. Connective Tissue . . . . .                 |                                  | 906                       | —               | —            | —      | 6              | 1                                   |
| 13. Skin . . . . .                              |                                  | 2,645                     | —               | —            | —      | 12             | 4                                   |
| III.—POISONS . . . . .                          |                                  | 15                        | 7               | —            | 7      | —              | —                                   |
| IV.—INJURIES.                                   |                                  |                           |                 |              |        |                |                                     |
| 1. General . . . . .                            |                                  | 169                       | 65              | —            | 65     | 3              | —                                   |
| 2. Local . . . . .                              |                                  | 4,909                     | 42              | —            | 42     | 40             | 35                                  |
| 3. In Action . . . . .                          |                                  | 1                         | 1               | —            | 1      | —              | 2                                   |
| No appreciable disease . . . . .                |                                  | 80                        | —               | —            | —      | —              | —                                   |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                         | —               | —            | —      | —              | —                                   |
| General Total . . . . .                         |                                  | 59,141                    | 647             | 16           | 663    | 969            | 495                                 |
| * Average o 10 years, 1877-86 . . . . .         |                                  | —                         | —               | —            | —      | —              | —                                   |

† The average ratios for 10 years will be given in future years. The average ratios for the 1886 to 1899 in that for

sions, into HOSPITAL, DEATHS, NUMBERS INVALIDED, and CONSTANTLY the Ratios per 1,000 of the Strength, and the average Ratios for 10 Years.\*

| Average Number constantly Sick. | Ratio per 1,000. |         |                      |                                |                   | † Average Ratio per 1,000 from 1886 to 1887. |         |                      |                                |                   |
|---------------------------------|------------------|---------|----------------------|--------------------------------|-------------------|----------------------------------------------|---------|----------------------|--------------------------------|-------------------|
|                                 | Ad-mis-sions.    | Deaths. | In-valids sent Home. | In-valids finally Dis-charged. | Con-stantly Sick. | Ad-mis-sions.                                | Deaths. | In-valids Sent Home. | In-valids finally Dis-charged. | Con-stantly Sick. |
| 10·23                           | 1·9              | ·19     | —                    | —                              | ·24               | ·7                                           | ·04     | —                    | —                              | ·07               |
| 1·02                            | ·7               | —       | —                    | —                              | ·02               | 5·6                                          | —       | —                    | —                              | ·13               |
| 92·54                           | 16·3             | 4·20    | ·09                  | —                              | 2·20              | 16·9                                         | 4·82    | ·10                  | —                              | 2·20              |
| 122·22                          | 83·0             | ·05     | —                    | —                              | 2·90              | 88·8                                         | ·10     | ·01                  | —                              | 3·03              |
| —                               | —                | —       | —                    | —                              | —                 | —                                            | —       | —                    | —                              | —                 |
| 6·64                            | 3·5              | 2·09    | —                    | —                              | ·16               | 2·1                                          | 1·45    | —                    | —                              | ·06               |
| 67·80                           | 25·2             | ·50     | ·81                  | ·07                            | 1·61              | 25·4                                         | ·72     | ·69                  | ·04                            | 1·58              |
| ·76                             | ·7               | ·02     | —                    | —                              | ·02               | ·9                                           | —       | —                    | —                              | ·03               |
| 301·21                          | 131·3            | 7·05    | ·90                  | ·07                            | 7·15              | 140·4                                        | 7·13    | ·80                  | ·04                            | 7·09              |
| 440·46                          | 345·5            | ·36     | 1·40                 | ·24                            | 10·45             | 368·7                                        | ·78     | ·77                  | ·02                            | 10·51             |
| 5·36                            | 1·8              | ·12     | —                    | —                              | ·13               | 1·5                                          | ·08     | —                    | ·01                            | ·10               |
| 212·68                          | 70·9             | —       | —                    | —                              | 5·04              | 96·8                                         | —       | ·01                  | —                              | 7·13              |
| 121·28                          | 30·8             | ·07     | ·95                  | ·64                            | 2·88              | 30·1                                         | ·10     | 1·10                 | ·21                            | 2·63              |
| 528·84                          | 182·4            | —       | —                    | —                              | 12·55             | 155·7                                        | —       | ·05                  | —                              | 10·23             |
| 862·80                          | 284·1            | ·07     | ·95                  | ·64                            | 20·47             | 282·6                                        | ·10     | 1·16                 | ·21                            | 19·99             |
| —                               | —                | —       | —                    | —                              | —                 | ·1                                           | ·05     | —                    | —                              | —                 |
| 3·02                            | 2·9              | —       | —                    | —                              | ·07               | 4·3                                          | —       | —                    | —                              | ·11               |
| 2·13                            | 1·0              | ·02     | —                    | —                              | ·05               | 2·4                                          | —       | —                    | —                              | ·10               |
| 17·43                           | 13·5             | ·05     | —                    | —                              | ·41               | 16·6                                         | ·11     | ·04                  | ·01                            | ·46               |
| 59·06                           | 22·3             | ·02     | 3·16                 | 1·14                           | 1·40              | 21·0                                         | ·05     | 1·96                 | 1·31                           | 1·33              |
| 84·80                           | 50·0             | ·09     | ·76                  | ·33                            | 2·02              | 32·9                                         | ·06     | ·87                  | ·27                            | 1·96              |
| 29·64                           | 3·3              | ·81     | 1·31                 | 1·09                           | ·70               | 3·8                                          | ·92     | 1·45                 | 1·09                           | ·70               |
| 32·70                           | 12·5             | ·26     | ·38                  | ·12                            | ·78               | 13·5                                         | ·11     | ·53                  | ·13                            | ·80               |
| 28·32                           | 9·8              | ·46     | 1·07                 | ·86                            | ·67               | 10·5                                         | ·32     | 1·06                 | ·68                            | ·76               |
| 23·86                           | 1·3              | —       | 1·26                 | 1·23                           | ·57               | 1·6                                          | —       | ·83                  | 1·02                           | ·65               |
| 33·25                           | 13·9             | —       | ·52                  | ·52                            | ·79               | 14·0                                         | —       | ·82                  | ·51                            | ·79               |
| 26·29                           | 12·6             | ·02     | ·59                  | ·48                            | ·62               | 13·0                                         | —       | ·93                  | ·51                            | ·57               |
| 43·52                           | 11·4             | ·26     | 2·35                 | 1·83                           | 1·03              | 12·8                                         | ·42     | 2·95                 | 1·99                           | 1·18              |
| 95·26                           | 37·5             | 1·14    | ·50                  | ·26                            | 2·26              | 36·3                                         | ·93     | ·73                  | ·41                            | 1·98              |
| 232·12                          | 136·2            | 1·92    | 1·80                 | ·65                            | 5·51              | 15·9                                         | 1·75    | 1·77                 | ·47                            | 5·78              |
| 84·08                           | 20·1             | ·05     | ·90                  | ·26                            | 2·00              | 20·7                                         | —       | ·17                  | ·08                            | 1·78              |
| 7·83                            | 2·2              | ·17     | ·33                  | ·19                            | ·19               | 2·1                                          | ·14     | ·24                  | ·09                            | ·18               |
| 237·82                          | 96·1             | ·02     | ·21                  | ·19                            | 5·64              | 76·5                                         | —       | ·24                  | ·22                            | 4·51              |
| 21·95                           | 7·1              | ·09     | ·79                  | ·64                            | ·52               | 6·8                                          | ·05     | ·60                  | ·52                            | ·54               |
| 39·67                           | 21·5             | —       | ·14                  | ·02                            | ·94               | 21·1                                         | —       | ·09                  | ·05                            | ·98               |
| 108·51                          | 62·7             | —       | ·29                  | ·09                            | 2·58              | 72·4                                         | —       | ·11                  | ·05                            | 2·88              |
| ·43                             | ·4               | ·17     | —                    | —                              | ·01               | ·8                                           | ·09     | —                    | —                              | ·01               |
| 7·71                            | 4·0              | 1·54    | ·07                  | —                              | ·18               | 3·3                                          | 1·37    | ·11                  | ·01                            | ·17               |
| 198·53                          | 116·5            | 1·00    | ·95                  | ·83                            | 4·71              | 118·1                                        | ·93     | ·83                  | ·46                            | 4·79              |
| ·83                             | —                | ·02     | —                    | ·05                            | ·01               | —                                            | —       | —                    | ·01                            | —                 |
| 4·12                            | 1·9              | —       | —                    | —                              | ·10               | 2·7                                          | —       | —                    | —                              | ·10               |
| —                               | —                | —       | —                    | —                              | —                 | —                                            | —       | —                    | —                              | ·03               |
| 3,032·30                        | 1,403·4          | 15·73   | 20·62                | 11·74                          | 71·96             | 1,458·9                                      | 15·39   | 18·49                | 10·17                          | 70·78             |
| —                               | 1,611·8          | 18·12   | 29·96                | 15·53                          | 70·27             | —                                            | —       | —                    | —                              | —                 |

three years, 1886 to 1888, will be given in the Report for 1889; those for the four years 1890, &c., &c.

ABSTRACT No. XV.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL CLASSES of DISEASES in each of the MILITARY DIVISIONS in the BENGAL

| Military Divisions.                             | Pre-sidency.                     |       | Allaha-bad. |       | Oudh.     |       | Rohil-cund. |       | Saugor.   |       | Gwalior.  |       |
|-------------------------------------------------|----------------------------------|-------|-------------|-------|-----------|-------|-------------|-------|-----------|-------|-----------|-------|
| Average Strength.                               | 2,044                            |       | 2,559       |       | 4,014     |       | 3,368       |       | 1,571     |       | 584       |       |
| Diseases.                                       | Admitted.                        | Died. | Admitted.   | Died. | Admitted. | Died. | Admitted.   | Died. | Admitted. | Died. | Admitted. | Died. |
| <b>I.—GENERAL DISEASES.</b>                     |                                  |       |             |       |           |       |             |       |           |       |           |       |
| <b>GROUP "A."</b>                               |                                  |       |             |       |           |       |             |       |           |       |           |       |
| Sub-Group I. {                                  | Small-pox . . . . .              | 1     | —           | 1     | —         | 35    | 5           | 1     | —         | 3     | 1         | 2     |
|                                                 | Other Eruptive Fevers . . . . .  | —     | —           | 4     | —         | 7     | —           | —     | —         | —     | —         | —     |
|                                                 | Enteric Fever . . . . .          | 8     | 5           | 65    | 16        | 109   | 15          | 118   | 21        | 11    | 6         | 13    |
|                                                 | Other Continued Fevers . . . . . | 80    | —           | 509   | —         | 66    | —           | 173   | —         | 16    | —         | 25    |
|                                                 | Yellow Fever . . . . .           | —     | —           | —     | —         | —     | —           | —     | —         | —     | —         | —     |
|                                                 | Cholera . . . . .                | 7     | 4           | 20    | 9         | —     | —           | 1     | —         | —     | —         | —     |
|                                                 | Dysentery . . . . .              | 123   | 2           | 79    | 3         | 109   | —           | 128   | 1         | 30    | —         | 24    |
|                                                 | Other diseases . . . . .         | —     | —           | 3     | —         | 1     | —           | 1     | —         | —     | —         | 4     |
|                                                 | Total . . . . .                  | 219   | 11          | 680   | 28        | 327   | 20          | 422   | 22        | 60    | 7         | 65    |
| Sub-Group II.—Malarial Fevers . . . . .         | 555                              | 4     | 852         | —     | 557       | —     | 542         | —     | 991       | 2     | 670       | —     |
| Sub-Group III.—Septic Diseases . . . . .        | 1                                | —     | 3           | —     | 1         | —     | 1           | —     | 1         | 1     | —         | —     |
| Sub-Group IV. {                                 | Syphilis, Primary . . . . .      | 112   | —           | 165   | —         | 514   | —           | 303   | —         | 24    | —         | 17    |
|                                                 | " " Secondary . . . . .          | 96    | —           | 81    | —         | 120   | —           | 131   | 1         | 54    | —         | 20    |
|                                                 | Gonorrhœa . . . . .              | 490   | —           | 580   | —         | 910   | —           | 760   | —         | 466   | —         | 131   |
|                                                 | Total . . . . .                  | 698   | —           | 826   | —         | 1,544 | —           | 1,194 | 1         | 544   | —         | 168   |
| Sub-Group V.—Hydrophobia, &c. . . . .           | —                                | —     | —           | —     | —         | —     | —           | —     | —         | —     | —         | —     |
| <b>GROUP "B."</b>                               |                                  |       |             |       |           |       |             |       |           |       |           |       |
| Sub-Group I.—Parasitic Diseases . . . . .       | 14                               | —     | 14          | —     | 14        | —     | 2           | —     | 7         | —     | —         | —     |
| Sub-Group II. {                                 | Scurvy . . . . .                 | 3     | —           | 1     | —         | 3     | —           | 13    | —         | 1     | —         | 2     |
|                                                 | Alcoholism . . . . .             | 32    | —           | 35    | —         | 39    | —           | 46    | —         | 54    | —         | 3     |
| <b>GROUP "C."</b>                               |                                  |       |             |       |           |       |             |       |           |       |           |       |
| Debility, &c. . . . .                           | 43                               | —     | 75          | —     | 72        | —     | 59          | —     | 31        | —     | 10        | —     |
| <b>GROUP "D."</b>                               |                                  |       |             |       |           |       |             |       |           |       |           |       |
| Rheumatism . . . . .                            | 53                               | —     | 87          | —     | 127       | —     | 71          | —     | 41        | —     | 16        | —     |
| Tubercular Diseases . . . . .                   | 5                                | 1     | 6           | 3     | 20        | 3     | 11          | —     | 9         | 3     | 1         | —     |
| Other diseases . . . . .                        | 36                               | —     | 16          | 2     | 63        | 2     | 47          | 1     | 23        | —     | 9         | 1     |
| <b>II.—LOCAL DISEASES.</b>                      |                                  |       |             |       |           |       |             |       |           |       |           |       |
| Diseases of the—                                |                                  |       |             |       |           |       |             |       |           |       |           |       |
| 1. Nervous System {                             | Nervous Diseases . . . . .       | 21    | 2           | 23    | 1         | 59    | 1           | 42    | 1         | 13    | —         | 5     |
|                                                 | Mental . . . . .                 | 7     | —           | 3     | —         | 7     | —           | 4     | —         | —     | —         | 1     |
| 2. Eye . . . . .                                | 25                               | —     | 39          | —     | 76        | —     | 37          | —     | 23        | —     | —         | —     |
| 3 & 4. Other Organs of Special Senses . . . . . | 57                               | —     | 41          | —     | 64        | —     | 48          | —     | 15        | —     | 11        | —     |
| 5. Circulatory System . . . . .                 | 28                               | 1     | 27          | —     | 64        | —     | 36          | 1     | 22        | —     | 15        | 1     |
| 6. Respiratory . . . . .                        | 66                               | 1     | 101         | 2     | 118       | 2     | 131         | 1     | 29        | 1     | 12        | —     |
| 7. Digestive . . . . .                          | 382                              | 5     | 458         | 6     | 468       | 3     | 579         | 11    | 235       | 1     | 114       | 1     |
| 8. Lymphatic and Glandular System . . . . .     | 59                               | —     | 84          | —     | 119       | —     | 50          | —     | 25        | —     | 27        | —     |
| 9. Urinary System . . . . .                     | 7                                | —     | 6           | —     | 6         | —     | 6           | —     | 3         | 1     | —         | —     |
| 10. Generative . . . . .                        | 290                              | —     | 182         | 1     | 157       | —     | 327         | —     | 119       | —     | 44        | —     |
| 11. Organs of Locomotion . . . . .              | 19                               | —     | 21          | —     | 33        | —     | 18          | —     | 8         | —     | 6         | —     |
| 12. Connective Tissue . . . . .                 | 27                               | —     | 47          | —     | 99        | —     | 65          | —     | 23        | —     | 10        | —     |
| 13. Skin . . . . .                              | 203                              | —     | 185         | —     | 312       | —     | 189         | —     | 107       | —     | 45        | —     |
| <b>III.—POISONS.</b>                            |                                  |       |             |       |           |       |             |       |           |       |           |       |
|                                                 | —                                | —     | 2           | 1     | —         | —     | 5           | 2     | 1         | 1     | —         | —     |
| <b>IV.—INJURIES.</b>                            |                                  |       |             |       |           |       |             |       |           |       |           |       |
| 1. General . . . . .                            | 7                                | 2     | 14          | 8     | 16        | 8     | 20          | 2     | —         | —     | 6         | 5     |
| 2. Local . . . . .                              | 275                              | 5     | 335         | 3     | 462       | 3     | 427         | —     | 215       | —     | 73        | 1     |
| 3. In Action . . . . .                          | —                                | —     | —           | —     | —         | —     | —           | —     | —         | —     | —         | —     |
| No appreciable disease . . . . .                | —                                | —     | —           | —     | 6         | —     | 2           | —     | 3         | —     | —         | —     |
| Cause unknown (refers to deaths only) . . . . . | —                                | —     | —           | —     | —         | —     | —           | —     | —         | —     | —         | —     |
| General Total . . . . .                         | 3,132                            | 33    | 4,168       | 55    | 4,833     | 42    | 4,394       | 42    | 2,602     | 17    | 1,518     | 18    |

OFFICER, showing the PREVALENCE and MORTALITY of the DIFFERENT COMMAND, with the ratios per 1,000 of Strength during the year 1888.

| Meerut.   |       | Sirhind.  |       | Lahore.   |       | Rawal Pindi. |       | Peshawar. |       | Quetta.   |       | Marching. |       | Camp of Exercise. |       | Total.    |       |
|-----------|-------|-----------|-------|-----------|-------|--------------|-------|-----------|-------|-----------|-------|-----------|-------|-------------------|-------|-----------|-------|
| 6,073     |       | 5,081     |       | 3,561     |       | 6,104        |       | 2,860     |       | 2,198     |       | 2,127     |       | —                 |       | 42,141    |       |
| Admitted. | Died. | Admitted. | Died. | Admitted. | Died. | Admitted.    | Died. | Admitted. | Died. | Admitted. | Died. | Admitted. | Died. | Admitted.         | Died. | Admitted. | Died. |
| 11        | —     | 3         | 1     | 10        | 1     | 6            | —     | 4         | —     | —         | —     | 1         | —     | —                 | —     | 78        | 8     |
| 4         | —     | 63        | —     | —         | —     | 1            | —     | —         | —     | 9         | —     | —         | —     | —                 | —     | 31        | —     |
| 91        | 32    | 6         | 18    | 31        | 7     | 104          | 29    | 21        | 11    | 49        | 12    | 3         | —     | —                 | —     | 888       | 177   |
| 709       | —     | 227       | —     | 456       | —     | 144          | 1     | 1,014     | —     | 49        | —     | 31        | —     | —                 | —     | 3,499     | 1     |
| —         | —     | —         | —     | —         | —     | —            | —     | —         | —     | —         | —     | —         | —     | —                 | —     | —         | —     |
| 1         | —     | —         | —     | —         | —     | 103          | 66    | 8         | 7     | —         | —     | 6         | 2     | —                 | —     | 146       | 88    |
| 112       | 4     | 124       | 2     | 71        | 1     | 93           | 2     | 75        | 1     | 38        | 1     | 57        | —     | —                 | —     | 1,063     | 21    |
| 1         | —     | 5         | 1     | —         | —     | 18           | —     | —         | —     | —         | —     | 1         | —     | —                 | —     | 30        | 1     |
| 929       | 36    | 428       | 22    | 568       | 9     | 460          | 98    | 1,123     | 19    | 145       | 13    | 99        | 2     | —                 | —     | 5,533     | 296   |
| 2,375     | 2     | 1,071     | —     | 1,340     | 1     | 2,367        | 4     | 1,761     | 1     | 504       | —     | 274       | —     | —                 | —     | 14,559    | 14    |
| 10        | —     | 12        | 2     | 1         | —     | 31           | 2     | 3         | —     | 5         | —     | 5         | —     | —                 | —     | 74        | 5     |
| 315       | —     | 594       | —     | 261       | —     | 544          | —     | 24        | —     | 24        | —     | 90        | —     | —                 | —     | 2,987     | —     |
| 157       | —     | 203       | —     | 129       | 1     | 196          | —     | 44        | —     | 62        | —     | 13        | —     | —                 | —     | 1,297     | —     |
| 1,214     | —     | 559       | —     | 832       | —     | 950          | —     | 348       | —     | 209       | —     | 240       | —     | —                 | —     | 7,689     | 2     |
| 1,686     | —     | 1,356     | —     | 1,213     | 1     | 1,690        | —     | 416       | —     | 295       | —     | 343       | —     | —                 | —     | 11,973    | 2     |
| —         | —     | —         | —     | —         | —     | —            | —     | —         | —     | —         | —     | —         | —     | —                 | —     | —         | —     |
| 15        | —     | 11        | —     | 15        | —     | 20           | —     | 6         | —     | 3         | —     | 1         | —     | —                 | —     | 125       | —     |
| 5         | —     | 3         | 1     | 3         | —     | 3            | —     | —         | —     | 4         | —     | —         | —     | —                 | —     | 41        | 1     |
| 32        | 1     | 123       | —     | 51        | —     | 102          | —     | 12        | —     | 35        | 1     | 3         | —     | —                 | —     | 567       | 2     |
| 314       | 1     | 53        | —     | 70        | —     | 92           | —     | 62        | —     | 46        | —     | 13        | —     | —                 | —     | 940       | 1     |
| 208       | 1     | 171       | 1     | 104       | 1     | 219          | —     | 64        | —     | 69        | —     | 24        | —     | —                 | —     | 1,264     | 3     |
| 27        | 7     | 17        | 4     | 6         | 5     | 125          | 4     | 4         | —     | 3         | —     | 4         | —     | —                 | —     | 138       | 30    |
| 74        | 2     | 86        | —     | 63        | —     | 57           | 2     | 24        | —     | 11        | —     | 3         | —     | —                 | —     | 627       | 10    |
| 57        | 5     | 58        | 3     | 18        | —     | 64           | 4     | 17        | 1     | 26        | 2     | 7         | —     | —                 | —     | 415       | 20    |
| 5         | —     | 5         | —     | 11        | —     | 5            | —     | 4         | —     | 2         | —     | 1         | —     | —                 | —     | 55        | —     |
| 97        | —     | 79        | —     | 40        | —     | 74           | —     | 56        | —     | 27        | —     | 9         | —     | —                 | —     | 586       | —     |
| 71        | —     | 45        | —     | 29        | —     | 57           | —     | 42        | 1     | 41        | —     | 2         | —     | —                 | —     | 533       | —     |
| 88        | 1     | 28        | 1     | 25        | 1     | 56           | 4     | 27        | —     | 61        | 1     | 5         | —     | —                 | —     | 482       | 11    |
| 207       | 11    | 123       | 2     | 124       | 2     | 219          | 12    | 102       | 3     | 305       | 7     | 39        | —     | —                 | —     | 1,581     | 47    |
| 719       | 10    | 118       | 11    | 467       | 5     | 761          | 16    | 334       | 4     | 334       | 5     | 82        | 1     | —                 | —     | 5,741     | 79    |
| 176       | —     | 88        | —     | 58        | 1     | 53           | —     | 56        | —     | 24        | —     | 29        | —     | —                 | —     | 848       | —     |
| 14        | 3     | 12        | 1     | 8         | —     | 13           | 1     | 8         | —     | 7         | 1     | 2         | —     | —                 | —     | 92        | 7     |
| 1,023     | —     | 236       | —     | 594       | —     | 331          | —     | 400       | —     | 162       | —     | 142       | —     | —                 | —     | 4,047     | 1     |
| 33        | —     | 30        | —     | 25        | 1     | 46           | —     | 28        | —     | 17        | —     | 14        | —     | —                 | —     | 298       | —     |
| 155       | —     | 150       | —     | 89        | —     | 113          | —     | 59        | —     | 51        | —     | 18        | —     | —                 | —     | 906       | —     |
| 446       | —     | 295       | —     | 254       | —     | 322          | —     | 176       | —     | 84        | —     | 27        | —     | —                 | —     | 2,642     | —     |
| —         | —     | 1         | —     | 2         | —     | 2            | 1     | 1         | 1     | —         | —     | 1         | 1     | —                 | —     | 15        | 7     |
| 20        | 6     | 17        | 3     | 15        | 7     | 27           | 8     | 19        | 8     | 1         | —     | 7         | 8     | —                 | —     | 169       | 65    |
| 698       | 7     | 643       | 5     | 391       | 5     | 752          | 6     | 305       | 2     | 259       | —     | 74        | 3     | —                 | —     | 4,909     | 42    |
| —         | —     | 9         | —     | 8         | —     | 26           | —     | 9         | —     | 9         | —     | —         | —     | —                 | —     | 1         | —     |
| —         | —     | —         | —     | —         | —     | —            | —     | —         | —     | —         | —     | —         | —     | —                 | —     | 80        | —     |
| 9,992     | 93    | 6,023     | 56    | 5,592     | 42    | 7,987        | 164   | 5,127     | 41    | 2,530     | 30    | 1,243     | 15    | —                 | —     | 59,141    | 647   |

Ratio per 1,000

| Military Divisions.                   | Pre-sidency.           |        | Allaha-bad. |        | Oudh.     |        | Bohil-cund. |        | Saugor.   |        | Gwalior.  |        |
|---------------------------------------|------------------------|--------|-------------|--------|-----------|--------|-------------|--------|-----------|--------|-----------|--------|
| Average Strength.                     | 2,044                  |        | 2,559       |        | 4,014     |        | 3,368       |        | 1,571     |        | 584       |        |
| Diseases.                             | Admitted.              | Died.  | Admitted.   | Died.  | Admitted. | Died.  | Admitted.   | Died.  | Admitted. | Died.  | Admitted. | Died.  |
| <b>I.—GENERAL DISEASES.</b>           |                        |        |             |        |           |        |             |        |           |        |           |        |
| <b>GROUP "A."</b>                     |                        |        |             |        |           |        |             |        |           |        |           |        |
| Sub-Group I.                          | Small-pox              | 5      | —           | —      | 8.7       | 1.24   | 3           | —      | 1.9       | .64    | 3.4       | —      |
|                                       | Other Eruptive Fevers  | —      | —           | 1.5    | 1.7       | —      | —           | —      | —         | —      | —         | —      |
|                                       | Enteric Fever          | 3.9    | 2.44        | 25.4   | 6.25      | 27.2   | 3.74        | 35.0   | 6.23      | 7.0    | 22.3      | 8.56   |
|                                       | Other Continued Fevers | 39.1   | —           | 193.9  | —         | 16.4   | —           | 51.4   | —         | 10.2   | 42.8      | —      |
|                                       | Yellow Fever           | —      | —           | —      | —         | —      | —           | —      | —         | —      | —         | —      |
|                                       | Cholera                | 3.4    | 1.96        | 7.8    | 3.52      | —      | —           | 3      | —         | —      | —         | —      |
| Sub-Group II.                         | Dysentery              | 60.2   | .98         | 30.9   | 1.17      | 27.2   | —           | 38.0   | .30       | 19.1   | 41.1      | 6.85   |
|                                       | Other Diseases         | —      | —           | .8     | —         | .3     | —           | .3     | —         | —      | 1.7       | —      |
| Total                                 |                        | 107.1  | 5.38        | 265.7  | 10.91     | 81.5   | 4.98        | 135.3  | 6.53      | 38.2   | 146       | 111.3  |
| Sub-Group III.—Malarial Fevers        |                        | 271.5  | 1.96        | 332.9  | —         | 138.8  | —           | 160.9  | —         | 630.8  | 1.27      | 1499.7 |
| Sub-Group IV.—Septic Diseases         |                        | 5      | —           | 1.2    | —         | .3     | —           | .3     | —         | .6     | .64       | —      |
| Sub-Group V.                          | Syphilis, Primary      | 51.8   | —           | 64.5   | —         | 128.1  | —           | 90.0   | —         | 15.3   | —         | 29.1   |
|                                       | " Secondary            | 47.0   | —           | 31.7   | —         | 29.9   | —           | 38.9   | .30       | 34.4   | —         | 34.3   |
|                                       | Gonorrhœa              | 239.7  | —           | 226.6  | —         | 226.7  | —           | 225.6  | —         | 296.6  | —         | 224.3  |
| Total                                 |                        | 341.5  | —           | 322.8  | —         | 384.7  | —           | 354.5  | .30       | 346.3  | —         | 237.7  |
| Sub-Group VI.—Hydrophobia, &c.        |                        | —      | —           | —      | —         | —      | —           | —      | —         | —      | —         | —      |
| <b>GROUP "B."</b>                     |                        |        |             |        |           |        |             |        |           |        |           |        |
| Sub-Group I.—Parasitic Diseases       |                        | 6.8    | —           | 5.5    | —         | 3.4    | —           | .6     | —         | 4.5    | —         | —      |
| Sub-Group II.                         | Scurvy                 | 1.5    | —           | .4     | —         | .8     | —           | .8     | —         | .6     | —         | 3.4    |
|                                       | Alcoholism             | 15.7   | —           | 13.7   | —         | 9.7    | —           | 13.7   | —         | 34.4   | —         | 5.1    |
| <b>GROUP "C."</b>                     |                        |        |             |        |           |        |             |        |           |        |           |        |
| Debility, &c.                         |                        | 21.0   | —           | 29.3   | —         | 17.9   | —           | 17.5   | —         | 19.7   | —         | 17.1   |
| <b>GROUP "D."</b>                     |                        |        |             |        |           |        |             |        |           |        |           |        |
| Rheumatism                            |                        | 25.9   | —           | 34.0   | —         | 31.6   | —           | 21.1   | —         | 28.1   | —         | 27.4   |
| Tubercular Diseases                   |                        | 2.5    | .49         | 2.3    | 1.17      | 5.0    | .75         | 3.3    | —         | 5.7    | 1.90      | 1.7    |
| Other Diseases                        |                        | 17.6   | —           | 6.3    | .78       | 15.7   | .50         | 13.9   | .30       | 14.6   | —         | 15.4   |
| <b>II.—LOCAL DISEASES.</b>            |                        |        |             |        |           |        |             |        |           |        |           |        |
| Diseases of the—                      |                        |        |             |        |           |        |             |        |           |        |           |        |
| 1. Nervous System { Nervous Diseases  |                        | 10.3   | .98         | 10.9   | .30       | 14.7   | .24         | 12.5   | .30       | 8.3    | —         | 8.6    |
| 2. Eye { Mental                       |                        | 3.4    | —           | 1.2    | —         | 1.7    | —           | 1.2    | —         | —      | —         | 1.7    |
| 3 & 4. Other Organs of Special Senses |                        | 12.2   | —           | 15.2   | —         | 18.9   | —           | 11.0   | —         | 14.0   | —         | 8.6    |
| 5. Circulatory System                 |                        | 27.9   | —           | 16.0   | —         | 15.9   | —           | 14.2   | —         | 9.6    | —         | 18.8   |
| 6. Respiratory                        |                        | 13.7   | .49         | 10.6   | —         | 15.9   | —           | 10.7   | .30       | 14.0   | —         | 25.7   |
| 7. Digestive                          |                        | 32.3   | .49         | 39.5   | .78       | 20.4   | .50         | 38.9   | .30       | 18.5   | .64       | 20.6   |
| 8. Lymphatic and Glandular System     |                        | 186.9  | 2.44        | 179.0  | 2.35      | 116.6  | .75         | 171.9  | 3.26      | 149.6  | .64       | 185.2  |
| 9. Urinary System                     |                        | 28.9   | —           | 32.8   | —         | 29.6   | —           | 14.8   | —         | 15.9   | —         | 46.2   |
| 10. Generative                        |                        | 3.4    | —           | 2.3    | —         | 1.5    | —           | 1.8    | —         | 1.9    | .64       | —      |
| 11. Organs of Locomotion              |                        | 141.9  | —           | 71.1   | .39       | 39.1   | —           | 97.1   | —         | 75.8   | —         | 75.3   |
| 12. Connective Tissue                 |                        | 9.3    | —           | 8.2    | —         | 8.2    | —           | 5.3    | —         | 5.1    | —         | 10.3   |
| 13. Skin                              |                        | 13.2   | —           | 18.4   | —         | 24.7   | —           | 19.3   | —         | 14.6   | —         | 17.1   |
| III.—POISONS                          |                        | 99.3   | —           | 72.3   | —         | 77.8   | —           | 56.1   | —         | 68.1   | —         | 77.1   |
| IV.—INJURIES.                         |                        | —      | —           | .8     | .39       | —      | —           | 1.5    | .59       | .6     | .64       | —      |
| 1. General                            |                        | 3.4    | .98         | 5.5    | 3.13      | 4.0    | 1.99        | 5.9    | .59       | —      | —         | 10.3   |
| 2. Local                              |                        | 134.6  | 2.44        | 130.9  | 1.17      | 116.1  | .75         | 126.8  | —         | 136.9  | —         | 125.0  |
| 3. In Action                          |                        | —      | —           | —      | —         | 1.5    | —           | .6     | —         | 1.9    | —         | —      |
| No appreciable disease                |                        | —      | —           | —      | —         | —      | —           | —      | —         | —      | —         | —      |
| Cause unknown (refers to deaths only) |                        | —      | —           | —      | —         | —      | —           | —      | —         | —      | —         | —      |
| General Total                         |                        | 1532.3 | 15.65       | 1628.8 | 31.49     | 1204.0 | 10.46       | 1304.6 | 12.47     | 1056.3 | 10.82     | 2599.3 |

\* The total of details comes

## Mean Strength.

| Meerut.   |       | Sirhind.  |       | Lahore.   |       | Rawal Pindi. |       | Peshawar. |       | Quetta.   |       | Troops on the March. |       | Total.    |       |
|-----------|-------|-----------|-------|-----------|-------|--------------|-------|-----------|-------|-----------|-------|----------------------|-------|-----------|-------|
| 6,072     |       | 5,081     |       | 3,561     |       | 6,104        |       | 2,360     |       | 2,106     |       | 2,127                |       | 42,141    |       |
| Admitted. | Died. | Admitted. | Died. | Admitted. | Died. | Admitted.    | Died. | Admitted. | Died. | Admitted. | Died. | Admitted.            | Died. | Admitted. | Died. |
| 1'8       | —     | 1'6       | 20    | 2'8       | 28    | 1'0          | —     | 1'4       | —     | —         | —     | 5                    | —     | 1'9       | 19    |
| 7         | —     | 1'2       | —     | 8'7       | 1'97  | 17'0         | 4'75  | 7'3       | 3'85  | 23'3      | 5'46  | 14'5                 | —     | 10'3      | 4'20  |
| 15'0      | 5'27  | 12'4      | 3'54  | 128'1     | —     | 23'6         | 1'18  | 35'6      | —     | 22'3      | —     | 14'5                 | —     | 83'0      | '02   |
| 116'7     | —     | 44'6      | —     | —         | —     | —            | —     | —         | —     | —         | —     | —                    | —     | —         | —     |
| —         | —     | —         | —     | —         | —     | 16'9         | 10'81 | 2'8       | 2'44  | —         | —     | 2'8                  | 94    | 3'5       | 2'09  |
| 2         | —     | —         | —     | 10'9      | 28    | 15'2         | 33    | 26'2      | 35    | 17'3      | 46    | 26'8                 | —     | 25'2      | '50   |
| 18'4      | 60    | 24'4      | 39    | 10'9      | 28    | 2'8          | —     | —         | —     | —         | —     | 2'8                  | —     | 7         | '02   |
| 2         | —     | 1'0       | 20    | —         | —     | 2'8          | —     | —         | —     | —         | —     | 5                    | —     | —         | —     |
| 153'0     | 5'93  | 84'2      | 4'33  | 130'5     | 2'53  | 76'8         | 16'05 | 302'3     | 6'64  | 66'0      | 5'92  | 46'5                 | 94    | 131'3     | 7'02  |
| 473'5     | 3'23  | 210'8     | —     | 376'3     | 28    | 387'8        | 66    | 615'7     | 35    | 229'5     | —     | 123'8                | —     | 345'5     | '33   |
| 1'6       | —     | 2'4       | 30    | 3         | —     | 5'1          | 33    | 1'0       | —     | 2'3       | —     | 2'4                  | —     | 1'8       | '12   |
| 51'9      | —     | 116'9     | —     | 73'3      | —     | 89'1         | —     | 8'4       | —     | 10'9      | —     | 42'3                 | —     | 70'9      | —     |
| 25'9      | —     | 40'0      | —     | 33'7      | 28    | 33'1         | —     | 15'4      | —     | 28'2      | —     | 6'1                  | —     | 50'8      | '05   |
| 199'9     | —     | 110'0     | —     | 233'6     | —     | 155'6        | —     | 121'7     | —     | 95'2      | —     | 112'8                | —     | 182'4     | —     |
| 277'7     | —     | 266'9     | —     | 340'6     | 28    | 276'8        | —     | 145'5     | —     | 184'3     | —     | 161'2                | —     | 234'1     | '05   |
| —         | —     | —         | —     | —         | —     | —            | —     | —         | —     | —         | —     | —                    | —     | —         | —     |
| 3'4       | —     | 2'2       | —     | 4'2       | —     | 3'3          | —     | 2'1       | —     | 1'4       | —     | 5                    | —     | 2'9       | —     |
| 8         | —     | 6         | 20    | 9         | —     | 5            | —     | —         | —     | 1'8       | —     | —                    | —     | 1'0       | '02   |
| 5'3       | 17    | 24'2      | —     | 14'8      | —     | 16'7         | —     | 4'2       | —     | 15'9      | 46    | 1'4                  | —     | 13'5      | '05   |
| 51'7      | 17    | 10'4      | —     | 19'7      | —     | 15'1         | —     | 21'7      | —     | 21'0      | —     | 6'1                  | —     | 22'3      | '02   |
| 34'3      | 17    | 33'7      | 20    | 20'2      | 28    | 35'9         | —     | 22'4      | —     | 31'4      | —     | 16'0                 | —     | 30'0      | '07   |
| 4'4       | 1'15  | 3'3       | 70    | 1'7       | 1'40  | 4'1          | 66    | 1'4       | —     | 1'4       | —     | 1'9                  | —     | 3'8       | '71   |
| 12'2      | 33    | 16'9      | —     | 17'7      | —     | 9'3          | 33    | 11'9      | —     | 5'0       | —     | 3'8                  | —     | 12'8      | '24   |
| 9'4       | 82    | 11'4      | 59    | 5'1       | —     | 10'5         | 66    | 5'9       | 33    | 11'8      | 91    | 3'3                  | —     | 9'8       | '48   |
| 8         | —     | 1'0       | —     | 3'1       | —     | 8            | —     | 1'4       | —     | 9         | —     | 5                    | —     | 1'3       | —     |
| 16'0      | —     | 15'5      | —     | 11'2      | —     | 12'1         | —     | 19'6      | —     | 12'3      | —     | 4'2                  | —     | 13'9      | —     |
| 11'7      | —     | 8'9       | —     | 11'0      | —     | 9'3          | —     | 14'7      | 33    | 18'7      | —     | 9                    | —     | 13'4      | '02   |
| 14'5      | 17    | 5'5       | 20    | 7'0       | 28    | 9'2          | 66    | 9'4       | —     | 27'8      | 46    | 2'4                  | —     | 11'4      | '26   |
| 34'1      | 1'81  | 25'2      | 39    | 34'8      | 1'40  | 35'9         | 1'66  | 35'7      | 1'05  | 188'9     | 3'18  | 18'3                 | —     | 37'5      | 1'13  |
| 118'4     | 1'64  | 161'0     | 2'16  | 128'3     | 1'40  | 124'7        | 3'62  | 116'8     | 1'40  | 152'1     | 2'27  | 38'5                 | 47    | 136'2     | 1'88  |
| 29'0      | —     | 17'3      | —     | 16'3      | 28    | 3'7          | —     | 19'6      | —     | 10'9      | —     | 13'6                 | —     | 20'1      | '02   |
| 2'3       | 49    | 2'4       | 20    | 2'2       | —     | 2'1          | 16    | 2'8       | —     | 3'2       | 46    | 9                    | —     | 2'3       | '17   |
| 168'5     | —     | 60'3      | —     | 168'8     | —     | 52'6         | —     | 139'9     | —     | 73'8      | —     | 66'8                 | —     | 96'1      | '02   |
| 5'4       | —     | 5'9       | —     | 7'0       | 28    | 7'5          | —     | 9'8       | —     | 7'7       | —     | 6'6                  | —     | 7'1       | '08   |
| 25'5      | —     | 29'5      | —     | 25'0      | —     | 18'5         | —     | 20'6      | —     | 23'2      | —     | 8'5                  | —     | 21'5      | —     |
| 73'6      | —     | 58'1      | —     | 71'3      | —     | 52'8         | —     | 61'5      | —     | 38'3      | —     | 12'7                 | —     | 68'7      | —     |
| —         | —     | 2         | —     | 6         | —     | 3            | 16    | 4         | 33    | —         | —     | 5                    | 47    | 4         | 17    |
| 3'3       | 99    | 3'3       | 59    | 4'2       | 1'97  | 4'4          | 1'31  | 6'6       | 2'80  | 5         | —     | 3'3                  | 3'76  | 4'0       | 1'54  |
| 115'0     | 1'15  | 126'5     | 93    | 109'8     | 1'40  | 123'2        | 1'31  | 106'6     | 70    | 117'9     | —     | 34'8                 | 1'41  | 116'5     | 1'00  |
| —         | —     | —         | —     | —         | —     | 2            | —     | —         | 35    | —         | —     | —                    | —     | 0         | '02   |
| 1'3       | —     | 1'8       | —     | 2'2       | —     | 4'3          | —     | 3'2       | —     | 4'1       | —     | —                    | —     | 1'9       | —     |
| —         | —     | —         | —     | —         | —     | —            | —     | —         | —     | —         | —     | —                    | —     | —         | —     |
| 1645'6    | 15'32 | 1185'4    | 11'02 | 1570'3    | 11'79 | 1308'5       | 26'87 | 1792'7    | 14'34 | 1152'1    | 13'68 | 584'4                | 7'05  | 1403'4    | 15'35 |

30'81 and 11'78 respectively.

ABSTRACT No. XVI.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the ADMISSIONS and DEATHS which took place at the CHIEF STATIONS in the BENGAL COMMAND during the year 1888.

| Divisions. | Stations.       | Average Annual Strength. | Admitted into Hospital. | Died in India. | Ratio per 1,000 of Strength. |         | Ratio per 1,000 of Strength, 1878 to 1887. |         |
|------------|-----------------|--------------------------|-------------------------|----------------|------------------------------|---------|--------------------------------------------|---------|
|            |                 |                          |                         |                | Admissions.                  | Deaths. | Admissions.                                | Deaths. |
| PRESIDENCY | Fort William    | 894                      | 1,482                   | 18             | 1657.7                       | 20.13   | 1234.7                                     | 11.82   |
|            | Dum-Dum         | 500                      | 804                     | 9              | 1608.0                       | 18.00   | 1416.6                                     | 10.94   |
|            | Barrackpore     | 347                      | 543                     | 1              | 1564.8                       | 2.88    | 1803.4                                     | 12.12   |
|            | Darjeeling      | 303                      | 303                     | 4              | 1000.0                       | 13.20   | 1127.0                                     | 17.89   |
| ALLAHABAD  | Allahabad       | 841                      | 1,671                   | 16             | 1986.9                       | 19.02   | 1733.7                                     | 23.33   |
|            | Fort Allahabad  | 193                      | 314                     | 2              | 1626.9                       | 10.36   | 1602.7                                     | 18.09   |
|            | Cawnpore        | 215                      | 397                     | 5              | 1846.5                       | 23.26   | 1506.0                                     | 15.93   |
|            | Dinapore        | 864                      | 1,023                   | 22             | 1197.9                       | 25.76   | 1564.7                                     | 15.41   |
|            | Benares         | 382                      | 605                     | 6              | 1583.8                       | 15.71   | 1665.1                                     | 26.76   |
|            | Chunar          | 74                       | 158                     | 4              | 2135.1                       | 54.05   | 2769.2                                     | 41.73   |
| ODDH       | Lucknow         | 2,760                    | 3,004                   | 32             | 1088.4                       | 11.59   | 1384.4                                     | 16.54   |
|            | Military Prison | 51                       | 54                      | —              | 1058.8                       | —       | 1181.5                                     | 18.52   |
|            | Sitapur         | 310                      | 461                     | 6              | 1445.1                       | 18.81   | 1356.2                                     | 22.73   |
|            | Fyzabad         | 894                      | 1,314                   | 4              | 1486.4                       | 4.62    | 1561.5                                     | 19.89   |
| ROHILCUND  | Barcilly        | 1,414                    | 1,817                   | 10             | 1285.0                       | 7.07    | 1383.5                                     | 11.82   |
|            | Moradabad       | 129                      | 127                     | 1              | 984.5                        | 7.75    | 1933.1                                     | 17.12   |
|            | Shahjehanpur    | 368                      | 598                     | 6              | 1625.0                       | 16.30   | 1418.3                                     | 14.91   |
|            | Ranikhet        | 889                      | 1,086                   | 17             | 1221.6                       | 19.12   | 1034.7                                     | 9.68    |
|            | Chaubuttia      | 358                      | 423                     | 4              | 1181.6                       | 11.17   | 1315.4                                     | 9.89    |
|            | Naini Tal       | 210                      | 343                     | 4              | 1633.3                       | 19.05   | 1536.1                                     | 19.78   |
| SAUGOR     | Jubbulpore      | 706                      | 992                     | 11             | 1407.1                       | 15.60   | 1393.6                                     | 12.07   |
|            | Saugor          | 364                      | 638                     | 3              | 1752.7                       | 8.24    | 1665.3                                     | 14.83   |
|            | Nowgong         | 424                      | 814                     | 3              | 1990.6                       | 7.08    | 1524.4                                     | 17.97   |
|            | Pachmarhi       | 78                       | 128                     | —              | 1641.0                       | —       | 1595.9                                     | 10.24   |
| GWALIOR    | Jhansi          | 487                      | 1,327                   | 17             | 2724.8                       | 34.91   | 1912.2                                     | 15.13   |
|            | Sipri           | 97                       | 191                     | 1              | 1969.1                       | 10.31   | 2461.3                                     | 20.51   |
| MEERUT     | Meerut          | 2,248                    | 3,510                   | 28             | 1561.4                       | 12.46   | 1731.9                                     | 15.43   |
|            | Fatehgarh       | 160                      | 294                     | 4              | 1837.5                       | 25.00   | 2048.9                                     | 17.00   |
|            | Agra            | 934                      | 1,572                   | 18             | 1683.1                       | 19.27   | 1678.7                                     | 13.14   |
|            | Muttra          | 470                      | 820                     | 7              | 1744.7                       | 14.89   | 2043.5                                     | 20.96   |
|            | Delhi           | 269                      | 755                     | 2              | 2806.7                       | 7.44    | 3481.6                                     | 19.25   |
|            | Roorkee         | 384                      | 618                     | 8              | 1609.4                       | 20.83   | 1608.6                                     | 16.08   |
|            | Chakrata        | 1,465                    | 2,247                   | 20             | 1533.8                       | 13.65   | 1138.9                                     | 7.02    |
|            | Landour         | 142                      | 176                     | 6              | 1289.4                       | 42.25   | 1767.7                                     | 12.67   |
| SIRHIND    | Umballa         | 1,926                    | 2,113                   | 20             | 1097.1                       | 10.38   | 1441.3                                     | 12.24   |
|            | Jullundur       | 989                      | 1,461                   | 8              | 1477.2                       | 5.00    | 1712.3                                     | 21.45   |
|            | Subathu         | 463                      | 607                     | 8              | 1311.0                       | 17.28   | 1368.0                                     | 17.90   |
|            | Dasgah          | 862                      | 832                     | 9              | 963.2                        | 10.44   | 1083.7                                     | 11.75   |
|            | Jutogh          | 277                      | 365                     | 6              | 1317.7                       | 21.66   | 1308.0                                     | 8.32    |
|            | Solan           | 211                      | 174                     | 3              | 824.6                        | 14.22   | 1199.9                                     | 9.97    |
|            | Kasauli         | 363                      | 471                     | 2              | 1334.3                       | 5.67    | 2056.5                                     | 17.22   |
|            | Meen Meer       | 794                      | 1,554                   | 13             | 1987.2                       | 16.37   | 2964.4                                     | 29.75   |
| LAHORE     | Fort Lahore     | 100                      | 216                     | 2              | 2160.0                       | 20.00   | 2641.8                                     | 44.78   |
|            | Ferozepore      | 978                      | 1,647                   | 10             | 1684.0                       | 10.22   | 1851.2                                     | 10.48   |
|            | Mooltan         | 844                      | 977                     | 9              | 1157.6                       | 10.66   | 1695.1                                     | 13.25   |
|            | Amritsar        | 240                      | 401                     | 8              | 1670.8                       | 12.50   | 2845.3                                     | 16.84   |
|            | Bhagsu          | 67                       | 73                      | —              | 1089.6                       | —       | 5167.1                                     | 11.76   |
|            | Dalhousie       | 538                      | 724                     | 5              | 1345.7                       | 9.29    | 1708.9                                     | 8.19    |

\* 6 years (1882-87).

† 9 years (1879-87).

‡ 2 years (1886-87).

§ 8 years (1878 and 1881-87).

| Divisions.  | Stations.           | Average Annual Strength. | Admitted into Hospital. | Died in India. | Ratio per 1,000 of Strength. |         | Ratio per 1,000 of Strength, 1878 to 1897. |         |
|-------------|---------------------|--------------------------|-------------------------|----------------|------------------------------|---------|--------------------------------------------|---------|
|             |                     |                          |                         |                | Admissions.                  | Deaths. | Admissions.                                | Deaths. |
| RAWAL PINDI | Rawal Pindi -       | 2,701                    | 3,706                   | 88             | 1372·1                       | 32·58   | 1547·2                                     | 13·47   |
|             | Fort Attock -       | 117                      | 269                     | 3              | 2299·1                       | 25·64   | 2521·5                                     | 24·71   |
|             | Sialkot -           | 1,202                    | 1,294                   | 13             | 1076·5                       | 10·82   | 1504·0                                     | 21·39   |
|             | Campbellpore -      | 201                      | 283                     | 2              | 1408·0                       | 9·95    | 1473·1                                     | 18·65   |
|             | Khyra Gully -       | 55                       | 73                      | —              | 1327·3                       | —       | 1453·7                                     | 30·84   |
|             | Barra Gully -       | 42                       | 48                      | 1              | 1142·9                       | 23·81   | 1328·2                                     | 3·86    |
|             | Kalabach -          | 59                       | 83                      | 1              | 1406·8                       | 16·94   | 1586·3                                     | 13·68   |
|             | Kuldunnah -         | 426                      | 510                     | 8              | 1197·2                       | 18·78   | 1329·7                                     | 11·74   |
|             | Camp Gharial -      | 439                      | 282                     | 14             | 642·4                        | 31·89   | 7934·4                                     | 5·25    |
|             | " Thobba -          | 223                      | 588                     | 2              | 2636·8                       | 8·97    | 11098·8                                    | —       |
| PESHAWAR    | " Topa -            | 374                      | 444                     | 5              | 1187·2                       | 13·37   | 11081·7                                    | 3·27    |
|             | Murree -            | 265                      | 407                     | 27             | 1536·8                       | 101·89  | 1661·1                                     | 19·78   |
|             |                     |                          |                         |                |                              |         |                                            |         |
| PESHAWAR    | Peshawar -          | 1,717                    | 3,695                   | 30             | 2152·0                       | 17·47   | 2319·0                                     | 21·23   |
|             | Nowshera -          | 602                      | 823                     | 9              | 1367·1                       | 14·95   | 1698·5                                     | 20·26   |
|             | Cherat -            | 541                      | 609                     | 2              | 1125·7                       | 3·70    | 11366·9                                    | 17·65   |
| QUETTA      | Quetta -            | 2,196                    | 2,530                   | 30             | 1152·1                       | 13·66   | 11375·3                                    | 16·53   |
| MARCHING    | Troops on the march | 2,127                    | 1,243                   | 15             | 584·4                        | 7·05    | 905·1                                      | 14·35   |

\* 9 years (1878-79 and 1881-87). † 8 years (1878 and 1881-87). ‡ 4 years (1882, 1884, 1886-87).  
 § 4 years (1884-87). || 9 years (1878 and 1880-87). ¶ 4 years (1881-82 and 1886-87).



ABSTRACT No. XVII.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the STATIONS in the BENGAL COMMAND at which the ADMISSIONS and DEATHS from ENTERIC FEVER took place in each of the four quarters of the year 1888.

| Divisions. | Stations.          | 1st Quarter. |         | 2nd Quarter. |         | 3rd Quarter. |         | 4th Quarter. |         | Total.      |         |
|------------|--------------------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|-------------|---------|
|            |                    | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions. | Deaths. |
| Presidency | Fort William       | 2            | 2       | —            | —       | —            | —       | —            | 1       | 2           | 3       |
|            | Dum Dum            | —            | —       | 2            | 1       | 1            | 1       | —            | —       | 3           | 2       |
|            | Barrackpore        | —            | —       | —            | —       | —            | —       | 2            | —       | 2           | —       |
|            | Darjeeling         | —            | —       | —            | —       | 1            | —       | —            | —       | 1           | —       |
| Allahabad  | Allahabad          | 2            | 1       | 19           | 1       | 9            | 2       | 1            | —       | 31          | 4       |
|            | Fort Allahabad     | 1            | —       | —            | —       | 1            | —       | 1            | —       | 3           | —       |
|            | Cawnpore           | —            | —       | 1            | 1       | 1            | 1       | —            | —       | 2           | 2       |
|            | Dinapore           | —            | —       | 3            | —       | 8            | 4       | 6            | 2       | 17          | 6       |
|            | Benares            | 1            | —       | 2            | 2       | —            | —       | 6            | 1       | 9           | 3       |
| Oudh       | Chunar             | —            | —       | —            | —       | 2            | —       | 1            | 1       | 3           | 1       |
|            | Lucknow            | 21           | 1       | 17           | 4       | 23           | 1       | 25           | 5       | 86          | 11      |
|            | „ Military Prison. | —            | —       | 1            | —       | —            | —       | 1            | —       | 2           | —       |
|            | Sitapur            | 2            | 2       | —            | —       | 1            | 1       | —            | —       | 3           | 3       |
|            | Fyzabad            | 9            | 1       | 6            | —       | 1            | —       | 2            | —       | 18          | 1       |
| Rohilcund  | Bareilly           | 6            | 2       | 9            | 1       | 4            | 1       | 14           | 2       | 33          | 6       |
|            | Moradabad          | 1            | —       | —            | 1       | 2            | —       | —            | —       | 3           | 1       |
|            | Shahjehanpur       | —            | —       | 1            | —       | 3            | 1       | 1            | 1       | 5           | 2       |
|            | Ranikhet           | 2            | —       | 24           | 4       | 28           | 4       | 1            | —       | 55          | 8       |
|            | Chaubuttia         | —            | —       | 10           | 2       | 9            | 1       | —            | —       | 19          | 3       |
| Saugor     | Naini Tal          | —            | —       | 1            | —       | 2            | 1       | —            | —       | 3           | 1       |
|            | Jubbulpore         | 1            | 1       | 1            | 1       | 2            | 1       | 5            | 2       | 9           | 5       |
|            | Saugor             | 1            | —       | 1            | 1       | —            | —       | —            | —       | 2           | 1       |
| Gwalior    | Jhansi             | 3            | —       | 1            | 1       | 4            | 2       | 3            | 1       | 11          | 4       |
|            | Sipri              | —            | —       | —            | —       | 1            | 1       | 1            | —       | 2           | 1       |

| Divisions.  | Stations.      | 1st Quarter. |         | 2nd Quarter. |         | 3rd Quarter. |         | 4th Quarter. |         | Total.      |         |
|-------------|----------------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|-------------|---------|
|             |                | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions. | Deaths. |
| Meerut      | Meerut -       | 2            | —       | 12           | 5       | 6            | 2       | 7            | 2       | 27          | 9       |
|             | Fatehgarh -    | —            | —       | —            | —       | 1            | —       | 2            | —       | 3           | —       |
|             | Agra -         | 4            | 1       | 6            | 3       | 1            | —       | 3            | 2       | 14          | 6       |
|             | Muttra -       | 1            | —       | 4            | 1       | 3            | 1       | 1            | 1       | 9           | 3       |
|             | Delhi -        | 1            | —       | 1            | 1       | 1            | —       | —            | —       | 3           | 1       |
|             | Roorkee -      | 5            | —       | 10           | 4       | 3            | 1       | —            | 1       | 18          | 6       |
|             | Chakrata -     | —            | —       | 9            | 2       | 4            | 2       | 1            | 1       | 14          | 5       |
| Sirhind     | Landour -      | —            | —       | 1            | —       | 2            | 2       | —            | —       | 3           | 2       |
|             | Umballa -      | 6            | —       | 6            | 2       | —            | —       | 3            | 1       | 15          | 3       |
|             | Jullundur -    | —            | —       | 4            | 1       | 2            | 1       | —            | —       | 6           | 2       |
|             | Subathu -      | —            | —       | 10           | 3       | 22           | 5       | —            | —       | 32          | 8       |
|             | Dagshai -      | —            | —       | —            | —       | 2            | 1       | —            | —       | 2           | 1       |
|             | Jutogh -       | —            | —       | 4            | 2       | 3            | 1       | —            | —       | 7           | 3       |
|             | Solon -        | —            | —       | 1            | 1       | —            | —       | —            | —       | 1           | 1       |
| Lahore -    | Meean Meer -   | 1            | —       | 9            | —       | 2            | 2       | 2            | 1       | 14          | 3       |
|             | Ferozepore -   | —            | —       | 2            | 1       | —            | —       | 1            | 1       | 3           | 2       |
|             | Mooltan -      | 1            | —       | 6            | 1       | 1            | 1       | 1            | —       | 9           | 2       |
|             | Bhagsu -       | —            | —       | —            | —       | 1            | —       | —            | —       | 1           | —       |
|             | Dalhousie -    | —            | —       | 4            | —       | —            | —       | —            | —       | 4           | —       |
| Rawal Pindi | Rawal Pindi -  | 9            | 3       | 13           | 5       | 4            | 1       | 15           | 5       | 41          | 14      |
|             | Fort Attock -  | 1            | —       | 1            | 1       | 1            | —       | —            | —       | 3           | 1       |
|             | Sialkot -      | 1            | —       | 9            | 3       | 11           | 1       | 8            | 2       | 29          | 6       |
|             | Campbellpore - | 1            | —       | 2            | —       | 1            | —       | 1            | —       | 5           | —       |
|             | Kalabagh -     | —            | —       | 2            | —       | —            | —       | —            | —       | 2           | —       |
|             | Camp Gharial - | —            | —       | 1            | 1       | 2            | —       | —            | —       | 3           | 1       |
|             | „ Thobba -     | —            | —       | 1            | —       | 1            | —       | —            | —       | 2           | —       |
|             | „ Topa -       | —            | —       | 11           | 1       | 1            | 1       | —            | —       | 12          | 2       |
|             | Murree -       | —            | —       | 6            | 5       | —            | —       | 1            | —       | 7           | 5       |

| Divisions. | Stations.            | 1st Quarter. |         | 2nd Quarter. |         | 3rd Quarter. |         | 4th Quarter. |         | Total.      |         |
|------------|----------------------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|-------------|---------|
|            |                      | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions. | Deaths. |
| Peshawar   | Peshawar -           | 1            | 1       | 7            | 3       | 5            | 4       | —            | —       | 13          | 8       |
|            | Nowshera -           | 1            | 1       | —            | —       | 1            | 1       | —            | —       | 2           | 2       |
|            | Cherat -             | —            | —       | 3            | —       | 3            | 1       | —            | —       | 6           | 1       |
| Quetta     | Quetta -             | —            | —       | 7            | 3       | 14           | 2       | 28           | 7       | 49          | 12      |
| Marching   | Troops on the March. | 1            | —       | —            | —       | —            | —       | 2            | —       | 3           | —       |
|            | Total -              | 88           | 16      | 251          | 69      | 201          | 52      | 146          | 40      | 686         | 177     |

**ABSTRACT No. XVIII.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the STATIONS in the BENGAL COMMAND at which the ADMISSIONS and DEATHS from CHOLERA took place in each of the four quarters of the year 1888.**

| Divisions.  | Stations.            | 1st Quarter. |         | 2nd Quarter. |         | 3rd Quarter. |         | 4th Quarter. |         | Total.      |         |
|-------------|----------------------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|-------------|---------|
|             |                      | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions.  | Deaths. | Admissions. | Deaths. |
| Presidency  | Fort William         | —            | —       | —            | —       | —            | —       | 4            | 3       | 4           | 3       |
|             | Dum Dum              | —            | —       | —            | —       | —            | —       | 1            | 1       | 1           | 1       |
|             | Barrackpore          | —            | —       | 1            | —       | —            | —       | 1            | —       | 2           | —       |
| Allahabad   | Allahabad            | 1            | —       | 3            | 2       | 5            | 1       | —            | —       | 9           | 3       |
|             | Dinapore             | —            | —       | —            | —       | 6            | 5       | —            | —       | 6           | 5       |
|             | Benares              | —            | —       | —            | —       | 5            | 1       | —            | —       | 5           | 1       |
| Rohileund   | Chaubuttia           | —            | —       | —            | —       | 1            | —       | —            | —       | 1           | —       |
| Meerut      | Meerut               | —            | —       | 1            | —       | —            | —       | —            | —       | 1           | —       |
| Rawal Pindi | Rawal Pindi          | —            | —       | 2            | 1       | 51           | 33      | 4            | 2       | 57          | 36      |
|             | Kuldunnah            | —            | —       | —            | —       | 1            | 1       | —            | —       | 1           | 1       |
|             | Camp Gharial         | —            | —       | —            | —       | 15           | 11      | —            | —       | 15          | 11      |
|             | „ Topa               | —            | —       | —            | —       | 2            | 2       | —            | —       | 2           | 2       |
|             | Murree               | —            | —       | 1            | 1       | 27           | 15      | —            | —       | 28          | 16      |
| Peshawar    | Peshawar             | —            | —       | —            | —       | 8            | 7       | —            | —       | 8           | 7       |
| Marching    | Troops on the march. | —            | —       | —            | —       | 6            | 2       | —            | —       | 6           | 2       |
|             | Total                | 1            | —       | 8            | 4       | 127          | 78      | 10           | 6       | 146         | 88      |

ABSTRACT No. XIX.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the PREVALENCE of DYSENTERY, DIARRHŒA, and HEPATIC DISEASES (Congestion, Inflammation, and Abscess of Liver) in each of the DIVISIONS in the BENGAL COMMAND during the Year 1888.

| Divisions.                      | Pre-sidency. | Allahabad. | Oudh.     | Rohilkund. | Saugor.   | Gwalior.  | Meerut.   | Sirhind.  | Lahore.   | Rawal Pindi. | Peshawar. | Quetta.   | Marching. | Total.    |     |    |     |   |     |    |     |   |       |    |    |   |       |    |
|---------------------------------|--------------|------------|-----------|------------|-----------|-----------|-----------|-----------|-----------|--------------|-----------|-----------|-----------|-----------|-----|----|-----|---|-----|----|-----|---|-------|----|----|---|-------|----|
| Strength.                       | 2,044        | 2,559      | 4,014     | 3,368      | 1,571     | 584       | 6,072     | 5,081     | 3,561     | 6,104        | 2,860     | 2,196     | 2,127     | 42,141    |     |    |     |   |     |    |     |   |       |    |    |   |       |    |
| Diseases.                       | Admitted.    | Admitted.  | Admitted. | Admitted.  | Admitted. | Admitted. | Admitted. | Admitted. | Admitted. | Admitted.    | Admitted. | Admitted. | Admitted. | Admitted. |     |    |     |   |     |    |     |   |       |    |    |   |       |    |
| Dysentery                       | 123          | 3          | 79        | 3          | 102       | —         | 24        | 4         | 112       | 4            | 124       | 2         | 71        | 1         | 83  | 2  | 75  | 1 | 38  | 1  | 57  | — | 1,063 | 21 | —  |   |       |    |
| Diarrhoea                       | 90           | —          | 150       | —          | 79        | —         | 46        | —         | 172       | —            | 137       | —         | 107       | —         | 201 | —  | 78  | — | 58  | —  | 28  | — | 1,39  | —  | —  |   |       |    |
| Hepatitis and Abscess of Liver. | 118          | 5          | 71        | 4          | 112       | 3         | 117       | 9         | 46        | 1            | 10        | —         | 106       | 6         | 133 | 11 | 76  | 4 | 107 | 12 | 53  | 4 | 39    | 3  | 13 | 1 | 1,026 | 63 |
| Total                           | 331          | 7          | 300       | 7          | 300       | 3         | 416       | 10        | 129       | 1            | 82        | 4         | 390       | 10        | 439 | 13 | 254 | 5 | 401 | 14 | 206 | 5 | 135   | 4  | 98 | 1 | 3,451 | 84 |

Ratio per 1,000 of Mean Strength.

|                                 |       |      |       |      |      |      |       |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |      |
|---------------------------------|-------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|------|
| Dysentery                       | 60.2  | 38   | 1.17  | 27.2 | —    | 33.0 | 19.1  | —    | 41.1 | 6.85 | 18.4  | 66   | 24.4 | 39   | 19.9 | 28   | 15.2 | 33   | 26.2 | 35   | 17.3 | 46   | 26.8 | —    | 25.2 | —   | 50   |      |
| Diarrhoea                       | 44.0  | —    | 53.6  | —    | 19.6 | —    | 50.8  | —    | 33.7 | —    | 83.2  | —    | 28.3 | —    | 30.9 | —    | 30.1 | —    | 33.9 | —    | 27.3 | —    | 26.4 | —    | 13.2 | —   | 33.0 | —    |
| Hepatitis and Abscess of Liver. | 57.7  | 2.44 | 27.7  | 1.56 | 27.9 | .75  | 34.7  | 2.67 | 29.3 | .64  | 17.1  | —    | 17.5 | .99  | 31.1 | 21.7 | 21.3 | 1.12 | 17.6 | 1.96 | 13.5 | 1.40 | 17.8 | 1.36 | 6.1  | .47 | 24.4 | 1.46 |
| Total                           | 161.9 | 3.42 | 117.2 | 3.73 | 74.7 | .75  | 123.5 | 2.97 | 82.1 | .64  | 140.4 | 6.85 | 64.2 | 1.65 | 36.4 | 2.56 | 71.3 | 1.40 | 65.7 | 2.29 | 72.0 | 1.76 | 61.5 | 1.83 | 46.1 | .47 | 32.6 | 1.99 |

ABSTRACT No. XX.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the PREVALENCE and MORTALITY in the Cantonments of the BENGAL COMMAND, due to DYSENTERY, DIARRHŒA, and HEPATITIS in each Quarter of the Year 1888.

|             | Strength. | Dysentery. |       |                              |       | Diarrhœa. |       |                              |       | Hepatitis (including Abscess of Liver). |       |                              |       | Total.    |       |                              |       |
|-------------|-----------|------------|-------|------------------------------|-------|-----------|-------|------------------------------|-------|-----------------------------------------|-------|------------------------------|-------|-----------|-------|------------------------------|-------|
|             |           | Number.    |       | Ratio per 1,000 of Strength. |       | Number.   |       | Ratio per 1,000 of Strength. |       | Number.                                 |       | Ratio per 1,000 of Strength. |       | Number.   |       | Ratio per 1,000 of Strength. |       |
|             |           | Admitted.  | Died. | Admitted.                    | Died. | Admitted. | Died. | Admitted.                    | Died. | Admitted.                               | Died. | Admitted.                    | Died. | Admitted. | Died. | Admitted.                    | Died. |
|             |           |            |       |                              |       |           |       |                              |       |                                         |       |                              |       |           |       |                              |       |
| 1st Quarter | 41,451    | 183        | —     | 4.4                          | —     | 162       | —     | 3.9                          | —     | 262                                     | 18    | 6.3                          | .43   | 607       | 18    | 14.6                         | .43   |
| 2nd "       | 43,253    | 275        | 5     | 6.3                          | .11   | 327       | —     | 7.6                          | —     | 297                                     | 15    | 6.9                          | .35   | 899       | 20    | 20.8                         | .46   |
| 3rd "       | 43,060    | 293        | 6     | 6.8                          | .14   | 612       | —     | 14.2                         | —     | 301                                     | 18    | 7.0                          | .42   | 1,206     | 24    | 28.0                         | .56   |
| 4th "       | 42,978    | 312        | 10    | 7.2                          | .23   | 351       | —     | 8.2                          | —     | 202                                     | 13    | 4.7                          | .28   | 865       | 22    | 20.1                         | .51   |
| Total       | 42,686    | 1,063      | 21    | 24.9                         | .49   | 1,452     | —     | 34.0                         | —     | 1,062                                   | 63    | 24.9                         | 1.48  | 3,577     | 84    | 83.8                         | 1.97  |

ABSTRACT No. XXI.—TABLE showing the AVERAGE STRENGTH, ADMIS-  
SICK among the TROOPS stationed in MADRAS during the Year 1888, with

| Average Strength, 14,073.                       |                                  | Admissions into Hospitals. | Deaths.              |              |        | Invalids.         |                                             | Average Number Constantly Sick. |
|-------------------------------------------------|----------------------------------|----------------------------|----------------------|--------------|--------|-------------------|---------------------------------------------|---------------------------------|
| Diseases.                                       |                                  |                            | In the Com-<br>mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis-<br>charged the Service. |                                 |
| I.—GENERAL DISEASES.                            |                                  |                            |                      |              |        |                   |                                             |                                 |
| GROUP "A."                                      |                                  |                            |                      |              |        |                   |                                             |                                 |
| Sub-Group I.                                    | Small-pox . . . . .              | 9                          | 1                    | —            | 1      | —                 | —                                           | 19                              |
|                                                 | Other Eruptive Fevers . . . . .  | 10                         | —                    | —            | —      | —                 | —                                           | 22                              |
|                                                 | Enteric Fever . . . . .          | 104                        | 32                   | —            | 32     | —                 | —                                           | 13.63                           |
|                                                 | Other Continued Fevers . . . . . | 835                        | 1                    | —            | 1      | 2                 | —                                           | 38.94                           |
|                                                 | Yellow Fever . . . . .           | —                          | —                    | —            | —      | —                 | —                                           | —                               |
|                                                 | Cholera . . . . .                | 54                         | 40                   | —            | 40     | —                 | —                                           | 77                              |
|                                                 | Dysentery . . . . .              | 789                        | 15                   | —            | 15     | 42                | 6                                           | 64.63                           |
|                                                 | Other Diseases . . . . .         | 9                          | 2                    | —            | 2      | —                 | —                                           | 32                              |
| Total . . . . .                                 |                                  | 1,810                      | 91                   | —            | 91     | 44                | 6                                           | 118.99                          |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 3,450                      | 30                   | —            | 30     | 4                 | 2                                           | 100.34                          |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | 11                         | —                    | —            | —      | —                 | —                                           | 57                              |
| Sub-Group IV.                                   | Syphilis, Primary . . . . .      | 1,151                      | —                    | —            | —      | 1                 | —                                           | 93.33                           |
|                                                 | " Secondary . . . . .            | 511                        | 2                    | —            | 2      | 41                | 25                                          | 55.47                           |
|                                                 | Gonorrhoea . . . . .             | 2,395                      | —                    | —            | —      | —                 | —                                           | 159.91                          |
| Total . . . . .                                 |                                  | 3,957                      | 2                    | —            | 2      | 42                | 25                                          | 308.71                          |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                          | —                    | —            | —      | —                 | —                                           | —                               |
| GROUP "B."                                      |                                  |                            |                      |              |        |                   |                                             |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | 67                         | —                    | —            | —      | 1                 | —                                           | 1.57                            |
| Sub-Group II.                                   | Scurvy . . . . .                 | —                          | —                    | —            | —      | —                 | —                                           | —                               |
|                                                 | Alcoholism . . . . .             | 217                        | —                    | —            | —      | —                 | —                                           | 5.78                            |
| GROUP "C."                                      |                                  |                            |                      |              |        |                   |                                             |                                 |
| Debility, &c. . . . .                           |                                  | 529                        | 2                    | —            | 2      | 53                | 23                                          | 31.83                           |
| GROUP "D."                                      |                                  |                            |                      |              |        |                   |                                             |                                 |
| Rheumatism . . . . .                            |                                  | 366                        | —                    | —            | —      | 12                | 4                                           | 27.11                           |
| Tubercular Diseases . . . . .                   |                                  | 41                         | 7                    | 4            | 11     | 14                | 8                                           | 8.98                            |
| Other Diseases . . . . .                        |                                  | 176                        | 1                    | —            | 1      | 11                | 2                                           | 11.47                           |
| II.—LOCAL DISEASES.                             |                                  |                            |                      |              |        |                   |                                             |                                 |
| Diseases of the—                                |                                  |                            |                      |              |        |                   |                                             |                                 |
| 1. Nervous System {                             | Nervous Diseases . . . . .       | 147                        | 4                    | —            | 4      | 19                | 6                                           | 10.76                           |
|                                                 | Mental " . . . . .               | 25                         | —                    | —            | —      | 22                | 22                                          | 8.69                            |
| 2. Eye . . . . .                                |                                  | 181                        | —                    | —            | —      | 6                 | 7                                           | 8.96                            |
| 3 & 4. Other Organs of Special Senses . . . . . |                                  | 201                        | —                    | —            | —      | 16                | 14                                          | 9.11                            |
| 5. Circulatory System . . . . .                 |                                  | 127                        | 4                    | 1            | 5      | 34                | 19                                          | 13.39                           |
| 6. Respiratory " . . . . .                      |                                  | 319                        | 9                    | 1            | 10     | 16                | 6                                           | 19.15                           |
| 7. Digestive . . . . .                          |                                  | 2,150                      | 35                   | 1            | 36     | 42                | 15                                          | 160.77                          |
| 8. Lymphatic and Glandular System . . . . .     |                                  | 593                        | 1                    | —            | 1      | 4                 | —                                           | 66.05                           |
| 9. Urinary System . . . . .                     |                                  | 61                         | —                    | —            | —      | 6                 | 2                                           | 5.23                            |
| 10. Generative " . . . . .                      |                                  | 1,426                      | —                    | —            | —      | 8                 | 2                                           | 86.45                           |
| 11. Organs of Locomotion . . . . .              |                                  | 93                         | —                    | —            | —      | 13                | 5                                           | 6.72                            |
| 12. Connective Tissue . . . . .                 |                                  | 300                        | —                    | —            | —      | 5                 | 1                                           | 15.94                           |
| 13. Skin . . . . .                              |                                  | 1,033                      | —                    | —            | —      | 1                 | 1                                           | 39.32                           |
| III.—POISONS . . . . .                          |                                  | 19                         | 1                    | —            | 1      | —                 | —                                           | 62                              |
| IV.—INJURIES.                                   |                                  |                            |                      |              |        |                   |                                             |                                 |
| 1. General . . . . .                            |                                  | 32                         | 23                   | —            | 23     | 5                 | —                                           | 1.91                            |
| 2. Local . . . . .                              |                                  | 1,649                      | 9                    | —            | 9      | 15                | 11                                          | 71.05                           |
| 3. In Action . . . . .                          |                                  | 3                          | 2                    | —            | 2      | —                 | 7                                           | 1.14                            |
| No appreciable disease . . . . .                |                                  | 18                         | —                    | —            | —      | —                 | —                                           | 70                              |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                          | —                    | —            | —      | —                 | —                                           | —                               |
| General Total . . . . .                         |                                  | 18,994                     | 220                  | 7            | 227    | 392               | 187                                         | 1081.77                         |
| * Average of 10 years 1877-86 . . . . .         |                                  | —                          | —                    | —            | —      | —                 | —                                           | —                               |

† The average ratios for 10 years will be given in future years. The average ratios  
years 1886 to 1889 in

1877-86

SIONS into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.

| Ratio per 1,000. |         |                     |                              |                  | * Average Ratio per 1,000 from 1886 to 1887. |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|----------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| .6               | .07     | —                   | —                            | .01              | .1                                           | —       | —                   | —                            | —                |
| .7               | —       | —                   | —                            | .02              | 2.7                                          | —       | —                   | —                            | .09              |
| 7.4              | 2.27    | —                   | —                            | .97              | 12.3                                         | 3.44    | .04                 | —                            | 1.67             |
| 59.3             | .07     | .14                 | —                            | 2.77             | 85.7                                         | .09     | —                   | —                            | 4.20             |
| —                | —       | —                   | —                            | —                | —                                            | —       | —                   | —                            | —                |
| 3.9              | 2.84    | —                   | —                            | .06              | .4                                           | .35     | —                   | —                            | —                |
| 56.1             | 1.07    | 2.96                | .43                          | 4.61             | 65.4                                         | 1.79    | 2.86                | .39                          | 5.37             |
| .6               | .14     | —                   | —                            | .02              | 1.7                                          | —       | —                   | —                            | .03              |
| 138.6            | 6.46    | 3.12                | .43                          | 8.46             | 166.2                                        | 5.66    | 2.92                | .39                          | 11.38            |
| 245.1            | 2.13    | .28                 | .14                          | 7.13             | 139.7                                        | .57     | .61                 | .04                          | 5.65             |
| .8               | —       | —                   | —                            | .02              | .8                                           | .09     | —                   | —                            | .04              |
| 81.8             | —       | .07                 | —                            | 6.63             | 87.1                                         | —       | —                   | —                            | 7.24             |
| 36.3             | .14     | 2.91                | 1.77                         | 3.94             | 33.2                                         | .04     | 1.74                | .30                          | 3.42             |
| 163.1            | —       | —                   | —                            | 11.36            | 146.6                                        | —       | —                   | —                            | 10.37            |
| 281.2            | .14     | 2.96                | 1.77                         | 21.93            | 266.9                                        | .04     | 1.74                | .30                          | 21.03            |
| —                | —       | —                   | —                            | —                | —                                            | —       | —                   | —                            | —                |
| 4.8              | —       | .07                 | —                            | .11              | 3.7                                          | —       | —                   | —                            | .10              |
| —                | —       | —                   | —                            | —                | .1                                           | —       | —                   | —                            | .01              |
| 15.4             | —       | —                   | —                            | .41              | 14.2                                         | —       | .04                 | —                            | .48              |
| 37.6             | .14     | 3.70                | 1.56                         | 2.26             | 28.2                                         | .04     | 3.75                | 1.57                         | 1.95             |
| 26.0             | —       | .85                 | .28                          | 1.93             | 28.3                                         | .09     | 1.18                | .35                          | 1.82             |
| 2.9              | .78     | .99                 | .57                          | .63              | 4.1                                          | .87     | 1.87                | 1.49                         | .80              |
| 12.5             | .07     | .78                 | .14                          | .62              | 9.3                                          | .26     | .26                 | .21                          | .61              |
| 10.4             | .28     | 1.35                | .43                          | .76              | 11.1                                         | .48     | 1.22                | 1.26                         | .71              |
| 1.8              | —       | 1.56                | 1.56                         | .62              | 1.7                                          | .04     | 1.35                | 1.66                         | .51              |
| 12.9             | —       | .43                 | .50                          | .63              | 14.3                                         | —       | .52                 | .74                          | .78              |
| 14.3             | —       | 1.14                | .99                          | .65              | 13.2                                         | —       | .87                 | .70                          | .67              |
| 9.0              | .26     | 2.42                | 1.35                         | .95              | 10.5                                         | .48     | 3.01                | 1.87                         | 1.09             |
| 22.7             | .71     | 1.14                | .43                          | 1.36             | 29.6                                         | .78     | 1.05                | .57                          | 1.76             |
| 152.8            | 2.56    | 2.98                | 1.07                         | 7.16             | 172.3                                        | 3.14    | 3.84                | 1.18                         | 8.00             |
| 42.1             | .07     | .28                 | —                            | 4.69             | 41.8                                         | —       | .46                 | .13                          | 4.60             |
| 4.3              | —       | .43                 | .14                          | .58              | 3.1                                          | .17     | .17                 | .13                          | .23              |
| 101.3            | —       | .57                 | .14                          | 6.15             | 100.8                                        | —       | .21                 | .09                          | 6.33             |
| 6.6              | —       | .93                 | .36                          | .48              | 5.1                                          | —       | .70                 | .61                          | .44              |
| 21.3             | —       | .36                 | .07                          | 1.13             | 19.9                                         | —       | .09                 | —                            | .93              |
| 73.4             | —       | .07                 | .07                          | 2.79             | 83.3                                         | —       | .17                 | .09                          | 3.24             |
| .9               | .07     | —                   | —                            | .04              | .7                                           | —       | —                   | —                            | .02              |
| 2.3              | 1.56    | .36                 | —                            | .14              | 1.7                                          | 1.35    | .04                 | —                            | .12              |
| 117.2            | .64     | 1.06                | .78                          | 5.05             | 127.4                                        | 1.09    | 1.39                | .73                          | 5.40             |
| .2               | .14     | —                   | .50                          | .08              | —                                            | —       | —                   | .09                          | .06              |
| 1.3              | —       | —                   | —                            | .06              | 2.2                                          | —       | —                   | —                            | .09              |
| —                | —       | —                   | —                            | —                | —                                            | —       | —                   | —                            | —                |
| 1340.7           | 16.13   | 27.86               | 13.28                        | 76.81            | 1302.2                                       | 15.17   | 27.51               | 14.21                        | 78.93            |
| 1220.3           | 13.53   | 31.48               | 14.92                        | 65.23            | —                                            | —       | —                   | —                            | —                |

for the three years 1886 to 1888 will be given in the Report for 1889; those for the four that for 1890, &c., &c.



## ARMY MEDICAL DEPARTMENT

ABSTRACT No. XXII.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER in each of the MILITARY DIVISIONS in the MADRAS

| Military Divisions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Madras District.   | South-ern District. | Belgaum and Banga-lore Districts. | Secun-derabad District. | Nagpore District.  | Burma District.    | Mying-yan and Mandala-y Districts. | Depôts.            | On the March.      | Total.             |
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| Average Strength - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 933                | 818                 | 4,163                             | 2,776                   | 836                | 1,976              | 1,856                              | 413                | 302                | 14,673             |
| Diseases.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Admitted.<br>Died. | Admitted.<br>Died.  | Admitted.<br>Died.                | Admitted.<br>Died.      | Admitted.<br>Died. | Admitted.<br>Died. | Admitted.<br>Died.                 | Admitted.<br>Died. | Admitted.<br>Died. | Admitted.<br>Died. |
| I.—GENERAL DISEASES.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| GROUP "A."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| Small-pox - - - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| Other Eruptive Fevers - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | —                  | —                   | —                                 | 38                      | 10                 | 8                  | —                                  | —                  | —                  | 10                 |
| Enteric Fever - - - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | —                  | 4                   | 2                                 | 41                      | 14                 | 5                  | 2                                  | 3                  | 1                  | 104                |
| Other Continued Fevers - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 97                 | 14                  | —                                 | 187                     | —                  | 9                  | —                                  | 72                 | —                  | 835                |
| Yellow Fever - - - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Cholera - - - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| Dysentery - - - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 29                 | 3                   | 23                                | 149                     | 2                  | 164                | 18                                 | 170                | 4                  | 165                |
| Other Diseases - - - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| Total - - - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 126                | 3                   | 41                                | 2                       | 385                | 14                 | 457                                | 15                 | 32                 | 2                  |
| Sub-Group II.—Malarial Fevers -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| Sub-Group III.—Septic Diseases -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| Sub-Group IV. { Syphilis, Primary - - -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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OFFICER, showing the PREVALENCE and MORTALITY of the different Classes of DISEASES  
COMMAND, for the Year 1888, with the Ratio per 1,000 of the Strength.

| Madras District.                  | Southern District. | Belgaum and Bangalore Districts. | Secunderabad District. | Nagpore District. | Burma District. | Myingyan and Mandalay Districts. | Depôts. | On the March. | Total. |      |
|-----------------------------------|--------------------|----------------------------------|------------------------|-------------------|-----------------|----------------------------------|---------|---------------|--------|------|
| Ratio per 1,000 of Mean Strength. |                    |                                  |                        |                   |                 |                                  |         |               |        |      |
| Admitted.                         | Died.              | Admitted.                        | Died.                  | Admitted.         | Died.           | Admitted.                        | Died.   | Admitted.     | Died.  |      |
| —                                 | —                  | —                                | —                      | 0.96              | —               | 1.80                             | 0.36    | —             | 0.64   | 0.07 |
| —                                 | —                  | —                                | —                      | 0.48              | —               | 2.88                             | —       | —             | 0.71   | —    |
| 105.97                            | —                  | 4.89                             | 2.44                   | 9.13              | 3.40            | 14.77                            | 5.04    | 5.98          | 2.39   | 2.27 |
| —                                 | —                  | 17.11                            | —                      | 44.92             | —               | 86.10                            | —       | 10.77         | —      | 0.07 |
| 1.07                              | —                  | —                                | —                      | 0.24              | 0.24            | —                                | —       | —             | —      | —    |
| 30.01                             | 3.22               | 23.13                            | —                      | 35.79             | 0.43            | 50.08                            | —       | 31.53         | —      | 2.84 |
| —                                 | —                  | —                                | —                      | 0.96              | 0.24            | —                                | —       | —             | —      | 1.07 |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | —             | —      | 0.14 |
| 135.05                            | 3.22               | 50.12                            | 2.44                   | 92.48             | 3.36            | 164.63                           | 5.40    | 38.28         | 2.39   | 6.47 |
| 53.59                             | —                  | 53.79                            | 1.22                   | 139.32            | 0.24            | 79.97                            | 0.36    | 449.76        | —      | 2.13 |
| 2.14                              | —                  | —                                | —                      | 0.48              | —               | 1.08                             | —       | —             | —      | —    |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | 0.51          | —      | —    |
| 87.89                             | —                  | 36.67                            | —                      | 98.01             | —               | 88.26                            | —       | 31.10         | —      | —    |
| 23.51                             | —                  | 53.79                            | —                      | 27.14             | —               | 42.51                            | —       | 27.51         | —      | 0.14 |
| 178.99                            | —                  | 174.62                           | —                      | 159.26            | —               | 161.02                           | —       | 166.27        | —      | —    |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | —             | —      | —    |
| 289.39                            | —                  | 265.28                           | —                      | 284.41            | —               | 291.79                           | —       | 224.88        | —      | 0.14 |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | —             | —      | —    |
| 5.36                              | —                  | 12.22                            | —                      | 3.60              | —               | 2.52                             | —       | —             | —      | —    |
| 34.30                             | —                  | 14.67                            | —                      | 21.14             | —               | 7.56                             | —       | 8.37          | —      | —    |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | —             | —      | —    |
| 50.37                             | —                  | 24.45                            | —                      | 24.74             | —               | 23.82                            | —       | 9.57          | —      | 0.14 |
| 40.73                             | —                  | 29.34                            | —                      | 29.31             | —               | 19.45                            | —       | 11.96         | —      | —    |
| 2.14                              | 1.07               | 3.67                             | —                      | 1.44              | 0.72            | 1.80                             | 0.36    | —             | —      | —    |
| 12.86                             | —                  | 4.89                             | —                      | 14.17             | —               | 12.25                            | 0.36    | —             | —      | —    |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | —             | —      | —    |
| 5.36                              | —                  | 14.67                            | —                      | 15.83             | 0.24            | 6.12                             | —       | 7.18          | —      | —    |
| 19.89                             | —                  | 8.67                             | —                      | 1.92              | —               | 0.72                             | —       | —             | —      | 0.28 |
| 64.31                             | —                  | 11.00                            | —                      | 15.37             | —               | 6.46                             | —       | 9.57          | —      | —    |
| —                                 | —                  | 6.11                             | —                      | 17.06             | —               | 7.92                             | —       | 4.79          | —      | —    |
| 6.43                              | —                  | 12.22                            | —                      | 10.57             | 0.24            | 5.04                             | 0.36    | 3.59          | 1.20   | —    |
| 22.51                             | —                  | 41.57                            | —                      | 29.79             | 0.24            | 15.49                            | 0.86    | 4.79          | —      | —    |
| 152.30                            | 1.07               | 193.16                           | 3.67                   | 153.98            | 0.72            | 149.86                           | 2.16    | 69.38         | 1.20   | —    |
| 78.24                             | —                  | 39.12                            | 1.22                   | 38.19             | —               | 23.06                            | —       | 46.65         | —      | —    |
| —                                 | —                  | 1.22                             | —                      | 5.53              | —               | 3.93                             | —       | 2.39          | —      | —    |
| 173.63                            | —                  | 68.46                            | —                      | 63.18             | —               | 85.37                            | —       | 218.90        | —      | —    |
| 15.01                             | —                  | 8.56                             | —                      | 9.37              | —               | 5.40                             | —       | 1.20          | —      | —    |
| 31.08                             | —                  | 13.45                            | —                      | 24.26             | —               | 15.86                            | —       | 11.96         | —      | —    |
| 183.28                            | —                  | 89.24                            | —                      | 63.06             | —               | 42.51                            | —       | 71.77         | —      | —    |
| 7.50                              | —                  | —                                | —                      | 0.72              | —               | —                                | —       | —             | —      | —    |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | —             | —      | —    |
| 3.22                              | 4.29               | 1.22                             | —                      | 1.20              | 0.48            | 2.16                             | 1.08    | 2.39          | —      | —    |
| 170.42                            | —                  | 91.69                            | —                      | 135.96            | 0.72            | 122.43                           | 1.08    | 89.71         | 1.20   | —    |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | —             | —      | —    |
| 2.14                              | —                  | —                                | —                      | 0.48              | —               | 1.44                             | —       | —             | —      | —    |
| —                                 | —                  | —                                | —                      | —                 | —               | —                                | —       | —             | —      | —    |
| 1560.56                           | 9.65               | 1063.79                          | 8.56                   | 1198.17           | 6.96            | 1103.74                          | 11.52   | 1287.08       | 5.98   | 15.6 |

ABSTRACT No. XXIII.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the AVERAGE STRENGTH, AVERAGE CONSTANTLY SICK, ADMISSIONS, DEATHS, and INVALIDS at the different STATIONS and DISTRICTS in the MADRAS COMMAND, for the Year 1888.

| Divisions.                      | Stations.              | Average Strength. | Average constantly Sick. | Admitted. | Died in and out of Hospital. | Invalids. | Ratio per 1,000 of Strength. |           |                              |           |                                         |       |
|---------------------------------|------------------------|-------------------|--------------------------|-----------|------------------------------|-----------|------------------------------|-----------|------------------------------|-----------|-----------------------------------------|-------|
|                                 |                        |                   |                          |           |                              |           | Average constantly Sick.     | Admitted. | Died in and out of Hospital. | Invalids. | Average of previous Period of 10 Years. |       |
|                                 |                        |                   |                          |           |                              |           |                              |           |                              |           | Admitted.                               | Died. |
| Madras District                 | Madras and Pallaveram. | 635               | 57                       | 1,002     | 4                            | 5         | 87.02                        | 1529.77   | 6.11                         | 7.63      | 1163.31                                 | 14.51 |
|                                 | St. Thomas' Mount      | 278               | 18                       | 454       | 5                            | 4         | 64.75                        | 1633.09   | 17.98                        | 14.39     | 1322.77                                 | 11.69 |
|                                 | Total                  | 933               | 75                       | 1,456     | 9                            | 9         | 80.39                        | 1560.56   | 9.65                         | 9.65      | —                                       | —     |
| Southern District               | Wellington Regiment.   | 471               | 28                       | 420       | 3                            | 8         | 59.45                        | 891.72    | 6.37                         | 16.99     | —                                       | —     |
|                                 | Cannanore              | 100               | 10                       | 160       | 1                            | 12        | 100.00                       | 1500.00   | 10.00                        | 120.00    | 1095.33                                 | 8.51  |
|                                 | Calicut                | 90                | 6                        | 96        | —                            | —         | 60.00                        | 969.69    | —                            | —         | 1071.71                                 | 8.84  |
|                                 | Mallapuram             | 148               | 10                       | 196       | 3                            | —         | 67.67                        | 1324.32   | 20.27                        | —         | 1104.84                                 | 14.83 |
|                                 | Total                  | 818               | 54                       | 862       | 7                            | 20        | 66.01                        | 1053.79   | 8.56                         | 24.45     | —                                       | —     |
| Belgaum and Bangalore Districts | Bangalore              | 2,210             | 172                      | 2,574     | 18                           | 65        | 77.83                        | 1164.70   | 8.14                         | 29.41     | 1145.96                                 | 8.12  |
|                                 | Bellary                | 803               | 65                       | 1,260     | 8                            | 16        | 80.95                        | 1569.11   | 9.96                         | 19.92     | 1515.44                                 | 8.49  |
|                                 | Belgaum                | 1,150             | 80                       | 1,154     | 3                            | 84        | 69.56                        | 1003.48   | 2.61                         | 73.04     | 1067.17                                 | 9.35  |
|                                 | Total                  | 4,163             | 317                      | 4,988     | 29                           | 165       | 76.15                        | 1198.17   | 6.96                         | 39.63     | —                                       | —     |
| Secunderabad District           | Secunderabad           | 2,776             | 184                      | 3,064     | 32                           | 57        | 66.28                        | 1103.74   | 11.52                        | 20.53     | 1151.21                                 | 11.94 |
| Nagpore District                | Kamptee                | 788               | 49                       | 1,026     | 4                            | 12        | 62.18                        | 1300.76   | 5.08                         | 15.23     | 1360.94                                 | 14.24 |
|                                 | Seetabuldee            | 48                | 2                        | 51        | 1                            | —         | 41.67                        | 1062.50   | 20.83                        | —         | 1540.02                                 | 7.84  |
|                                 | Total                  | 836               | 51                       | 1,076     | 5                            | 12        | 61.00                        | 1287.08   | 5.98                         | 14.35     | —                                       | —     |

## ABSTRACT No. XXII.—continued.

| Divisions.                      | Stations.         |           | Average Strength. | Average constantly Sick. | Admitted. | Died in and out of Hospital. | Invalided. | Ratio per 1,000 of Strength. |           |                              |            |                                                                                                    |       | Average of previous Period of 10 Years. |       |
|---------------------------------|-------------------|-----------|-------------------|--------------------------|-----------|------------------------------|------------|------------------------------|-----------|------------------------------|------------|----------------------------------------------------------------------------------------------------|-------|-----------------------------------------|-------|
|                                 |                   |           |                   |                          |           |                              |            | Average constantly Sick.     | Admitted. | Died in and out of Hospital. | Invalided. |                                                                                                    |       | Admitted.                               | Died. |
|                                 |                   |           |                   |                          |           |                              |            |                              |           |                              |            |                                                                                                    |       |                                         |       |
| Burma District                  | Rangoon -         | -         | 1,008             | 91                       | 1,008     | 14                           | 37         | 90'73                        | 1004'98   | 13'96                        | 36'68      | 1477'64                                                                                            | 15'31 |                                         |       |
|                                 | Thayetmyo -       | -         | 385               | 24                       | 479       | 6                            | —          | 62'34                        | 1244'16   | 15'58                        | —          | 1253'80                                                                                            | 17'24 |                                         |       |
|                                 | Toungoo -         | -         | 427               | 34                       | 474       | 5                            | 24         | 79'62                        | 1110'07   | 11'71                        | 56'20      | 1100'27                                                                                            | 11'53 |                                         |       |
|                                 | Port Blair -      | -         | 144               | 6                        | 176       | 1                            | —          | 41'68                        | 1222'22   | 6'94                         | —          | 983'64                                                                                             | 6'69  |                                         |       |
|                                 | Monokon -         | -         | 17                | —                        | 29        | —                            | —          | —                            | 1705'88   | —                            | —          | —                                                                                                  | —     |                                         |       |
|                                 | Total             | -         | 1,976             | 155                      | 2,166     | 26                           | 61         | 78'44                        | 1096'15   | 13'16                        | 30'87      | —                                                                                                  | —     |                                         |       |
| Mingyan and Mandalay Districts. | Mandalay -        | -         | 586               | 56                       | 1,197     | 28                           | —          | 95'56                        | 2042'66   | 47'78                        | —          | These statistics refer to a period of only nine months, viz. from 1st April to 31st December 1888. | —     |                                         |       |
|                                 | Bhamo -           | -         | 319               | 33                       | 1,124     | 16                           | —          | 103'45                       | 3523'51   | 50'16                        | —          |                                                                                                    | —     |                                         |       |
|                                 | Mingyan -         | -         | 215               | 31                       | 437       | 18                           | 13         | 144'18                       | 2032'56   | 83'72                        | 60'46      |                                                                                                    | —     |                                         |       |
|                                 | Shwebo -          | -         | 198               | 17                       | 373       | 2                            | —          | 85'86                        | 1883'84   | 10'10                        | —          |                                                                                                    | —     |                                         |       |
|                                 | Meiktila -        | -         | 157               | 11                       | 267       | 5                            | —          | 70'06                        | 1700'64   | 31'85                        | —          |                                                                                                    | —     |                                         |       |
|                                 | Bernardmyo -      | -         | 123               | 6                        | 147       | 2                            | —          | 48'78                        | 1195'12   | 16'26                        | —          |                                                                                                    | —     |                                         |       |
|                                 | Minbu -           | -         | 57                | 6                        | 113       | 1                            | —          | 105'26                       | 1982'46   | 17'54                        | —          |                                                                                                    | —     |                                         |       |
|                                 | Koni, or Stedman. | Port      | 64                | 12                       | 332       | 13                           | —          | 187'50                       | 5187'50   | 203'12                       | —          |                                                                                                    | —     |                                         |       |
|                                 | Salenmyo -        | -         | 54                | 6                        | 122       | 3                            | —          | 111'11                       | 2259'26   | 55'55                        | —          |                                                                                                    | —     |                                         |       |
|                                 | Maymyo -          | -         | 45                | 6                        | 181       | —                            | —          | 153'33                       | 4022'22   | —                            | —          |                                                                                                    | —     |                                         |       |
|                                 | Myimun -          | Out-post. | 15                | —                        | 47        | —                            | —          | —                            | 3133'33   | —                            | —          |                                                                                                    | —     |                                         |       |
|                                 | Thagyin -         |           | 14                | 1                        | 21        | 2                            | —          | 71'43                        | 1500'00   | 142'85                       | —          |                                                                                                    | —     |                                         |       |
|                                 | Gonyinzaik -      |           | 9                 | 1                        | 33        | —                            | —          | 111'11                       | 3666'66   | —                            | —          |                                                                                                    | —     |                                         |       |
|                                 | Total             | -         | 1,856             | 186                      | 4,394     | 90                           | 13         | 100'22                       | 2367'45   | 48'49                        | 7'00       | —                                                                                                  | —     |                                         |       |
| Depôts                          | Poonamallee -     | -         | 135               | 26                       | 249       | 4                            | 50         | 192'59                       | 1844'44   | 29'63                        | 370'37     | 1982'60                                                                                            | 47'03 |                                         |       |
|                                 | Wellington -      | -         | 278               | 25                       | 370       | 1                            | 5          | 89'83                        | 1330'93   | 3'60                         | 17'98      | 1137'94                                                                                            | 11'26 |                                         |       |
|                                 | Total             | -         | 413               | 51                       | 619       | 5                            | 55         | 123'40                       | 1408'78   | 12'11                        | 133'17     | —                                                                                                  | —     |                                         |       |
| Marching                        | On the March      | -         | 302               | 8                        | 369       | 17                           | —          | 26'49                        | 1221'85   | 56'29                        | —          | 500'82                                                                                             | 44'24 |                                         |       |

**ABSTRACT No. XXIV.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the STATIONS in the MADRAS COMMAND at which the ADMISSIONS and DEATHS from ENTERIC FEVER took place in each of the four quarters of the Year 1888.**

| Divisions.                        | Stations.    | 1st Quarter. |       | 2nd Quarter. |       | 3rd Quarter. |       | 4th Quarter. |       | Total.    |       |
|-----------------------------------|--------------|--------------|-------|--------------|-------|--------------|-------|--------------|-------|-----------|-------|
|                                   |              | Admitted.    | Died. | Admitted.    | Died. | Admitted.    | Died. | Admitted.    | Died. | Admitted. | Died. |
| Madras District -                 | Poonamallee  | 1            | —     | —            | —     | —            | —     | 1            | —     | 2         | —     |
| Southern District -               | Wellington - | —            | —     | —            | —     | 2            | —     | 2            | —     | 4         | —     |
|                                   | Cannanore -  | —            | —     | —            | —     | —            | —     | 1            | 1     | 1         | 1     |
|                                   | Malliapuram  | —            | —     | —            | —     | 1            | 1     | —            | —     | 1         | 1     |
| Belgaum and Bangalore Districts - | Bangalore -  | 3            | 2     | 8            | 2     | 20           | 4     | 4            | 1     | 35        | 10    |
|                                   | Bellary -    | 1            | —     | —            | —     | 1            | —     | —            | —     | 2         | —     |
|                                   | Belgaum -    | —            | —     | —            | —     | 1            | —     | —            | —     | 1         | —     |
| Secunderabad District.            | Secunderabad | 6            | 2     | 6            | 3     | 24           | 8     | 5            | 1     | 41        | 14    |
| Nagpore District                  | Kamptee -    | —            | —     | —            | —     | 4            | 1     | —            | —     | 4         | 1     |
|                                   | Seetabuldee  | —            | —     | —            | —     | 1            | 1     | —            | —     | 1         | 1     |
| Burma District -                  | Thayetmyo -  | —            | —     | —            | —     | —            | —     | 2            | —     | 2         | —     |
|                                   | Toungoo -    | —            | —     | —            | —     | —            | —     | 1            | 1     | 1         | 1     |
| Myingyan and Mandalay Districts - | Myingyan -   | —            | —     | 1            | 2     | —            | —     | 2            | —     | 3         | 2     |
|                                   | Bhamo -      | —            | —     | 1            | —     | —            | 1     | —            | —     | 1         | 1     |
|                                   | Salenmyo -   | —            | —     | 1            | —     | —            | —     | —            | —     | 1         | —     |
|                                   | Shwebo -     | —            | —     | 1            | —     | 1            | —     | —            | —     | 2         | —     |
|                                   | On the March | 2            | —     | —            | —     | —            | —     | —            | —     | 2         | —     |
| Total -                           |              | 13           | 4     | 18           | 8     | 55           | 16    | 18           | 4     | 104       | 32    |

ABSTRACT No. XXV.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the STATIONS in the MADRAS COMMAND at which the ADMISSIONS and DEATHS from CHOLERA took place in each of the four quarters of the Year 1888.

| Divisions.                        | Stations.              | 1st Quarter. |       | 2nd Quarter. |       | 3rd Quarter. |       | 4th Quarter. |       | Total.    |       |
|-----------------------------------|------------------------|--------------|-------|--------------|-------|--------------|-------|--------------|-------|-----------|-------|
|                                   |                        | Admitted.    | Died. | Admitted.    | Died. | Admitted.    | Died. | Admitted.    | Died. | Admitted. | Died. |
| Madras District -                 | St. Thomas' Mount.     | —            | —     | 1            | —     | —            | —     | —            | —     | 1         | —     |
| Belgaum and Bangalore Districts.  | Bellary -              | —            | —     | —            | —     | —            | —     | 1            | 1     | 1         | 1     |
| Burma District                    | Rangoon -              | 1            | 1     | —            | —     | —            | —     | —            | —     | 1         | 1     |
|                                   | Thayetmyo -            | —            | —     | 1            | 1     | —            | —     | —            | —     | 1         | 1     |
|                                   | Toungoo -              | —            | —     | 2            | —     | —            | —     | —            | —     | 2         | —     |
| Myingyan and Mandalay Districts - | Mandalay -             | —            | —     | 15           | 9     | —            | —     | —            | —     | 15        | 9     |
|                                   | Myingyan -             | —            | —     | 12           | 7     | —            | —     | —            | —     | 12        | 7     |
|                                   | Bhamo -                | —            | —     | 4            | 2     | —            | —     | —            | —     | 4         | 2     |
|                                   | Koni and Fort Stedman. | —            | —     | 7            | 6     | 3            | 2     | —            | —     | 10        | 8     |
|                                   | On the March           | —            | —     | —            | 5     | 7            | 6     | —            | —     | 7         | 11    |
|                                   | Total -                | 1            | 1     | 42           | 30    | 10           | 8     | 1            | 1     | 54        | 40    |

**ABSTRACT No. XXVI.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the prevalence of DYSENTERY, DIARRHŒA, and HEPATITIS in each of the DIVISIONS in the MADRAS COMMAND for 1888.**

| Divisions.                     | Madras District. |       | Southern District. |       | Belgaum and Bangalore Districts. |       | Secunderabad District. |       | Nagpore District. |       | Burma District. |       | Mylingyan and Mandalay Districts. |       | On the March. |       | Total.    |       |
|--------------------------------|------------------|-------|--------------------|-------|----------------------------------|-------|------------------------|-------|-------------------|-------|-----------------|-------|-----------------------------------|-------|---------------|-------|-----------|-------|
|                                | Admitted.        | Died. | Admitted.          | Died. | Admitted.                        | Died. | Admitted.              | Died. | Admitted.         | Died. | Admitted.       | Died. | Admitted.                         | Died. | Admitted.     | Died. | Admitted. | Died. |
| Strength.                      | 1,068            |       | 1,096              |       | 4,163                            |       | 2,776                  |       | 836               |       | 1,976           |       | 1,856                             |       | 302           |       | 14,073    |       |
| Diseases.                      |                  |       |                    |       |                                  |       |                        |       |                   |       |                 |       |                                   |       |               |       |           |       |
| Dysentery -                    | 71               | 3     | 32                 | —     | 149                              | 2     | 164                    | —     | 18                | —     | 170             | 4     | 165                               | 5     | 20            | 1     | 789       | 15    |
| Diarrhœa -                     | 40               | —     | 35                 | —     | 153                              | —     | 88                     | —     | 13                | —     | 54              | —     | 195                               | 2     | 20            | —     | 598       | 2     |
| Hepatitis and Abscess of Liver | 17               | 2     | 41                 | 3     | 60                               | 3     | 72                     | 6     | 6                 | —     | 11              | 5     | 56                                | 10    | —             | —     | 263       | 29    |
| Total -                        | 128              | 5     | 108                | 3     | 362                              | 5     | 324                    | 6     | 37                | —     | 235             | 9     | 416                               | 17    | 40            | 1     | 1,650     | 46    |
| Ratio per 1,000 of Strength.   |                  |       |                    |       |                                  |       |                        |       |                   |       |                 |       |                                   |       |               |       |           |       |
| Dysentery -                    | 66.48            | 2.81  | 29.20              | —     | 35.79                            | 0.48  | 59.08                  | —     | 21.53             | —     | 86.03           | 2.02  | 88.90                             | 2.69  | 66.23         | 3.31  | 56.06     | 1.07  |
| Diarrhœa -                     | 37.45            | —     | 31.93              | —     | 36.75                            | —     | 31.70                  | —     | 15.55             | —     | 27.33           | —     | 105.06                            | 1.08  | 66.23         | —     | 42.49     | 0.14  |
| Hepatitis and Abscess of Liver | 15.92            | 1.87  | 37.41              | 2.74  | 14.41                            | 0.72  | 25.93                  | 2.16  | 7.18              | —     | 5.57            | 2.53  | 30.17                             | 5.39  | —             | —     | 18.69     | 2.06  |
| Total -                        | 119.85           | 4.68  | 98.54              | 2.74  | 86.95                            | 1.20  | 116.71                 | 2.16  | 44.26             | —     | 118.93          | 4.55  | 92.4.13                           | 9.16  | 132.45        | 3.31  | 117.24    | 3.27  |

ABSTRACT No. XXVII.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the PREVALENCE and MORTALITY in the MADRAS COMMAND, due to DYSENTERY, DIARRHŒA, and HEPATITIS, in each Quarter of the Year 1888.

|                    | Strength. | Dysentery. |       |                              |       | Diarrhœa. |       |                              |       | Hepatitis (including Abscess of Liver). |       |                              |       | Total.    |       |                              |       |
|--------------------|-----------|------------|-------|------------------------------|-------|-----------|-------|------------------------------|-------|-----------------------------------------|-------|------------------------------|-------|-----------|-------|------------------------------|-------|
|                    |           | Number.    |       | Ratio per 1,000 of Strength. |       | Number.   |       | Ratio per 1,000 of Strength. |       | Number.                                 |       | Ratio per 1,000 of Strength. |       | Number.   |       | Ratio per 1,000 of Strength. |       |
|                    |           | Admitted.  | Died. | Admitted.                    | Died. | Admitted. | Died. | Admitted.                    | Died. | Admitted.                               | Died. | Admitted.                    | Died. | Admitted. | Died. | Admitted.                    | Died. |
| 1st Quarter        | 11,725    | 131        | 2     | 10.32                        | 0.17  | 74        | —     | 6.31                         | —     | 55                                      | 6     | 4.69                         | 0.51  | 250       | 8     | 21.32                        | 0.68  |
| 2nd "              | 15,404    | 247        | 3     | 16.04                        | 0.19  | 255       | 1     | 16.55                        | 0.07  | 78                                      | 7     | 5.06                         | 0.45  | 580       | 11    | 37.65                        | 0.71  |
| 3rd "              | 15,342    | 255        | 8     | 16.62                        | 0.52  | 183       | 1     | 11.93                        | 0.07  | 83                                      | 8     | 5.41                         | 0.52  | 521       | 17    | 33.96                        | 1.11  |
| 4th "              | 13,822    | 166        | 2     | 12.01                        | 0.14  | 86        | —     | 6.22                         | —     | 47                                      | 8     | 3.40                         | 0.58  | 299       | 10    | 21.63                        | 0.72  |
| Total for the Year | 14,073    | 789        | 15    | 56.06                        | 1.07  | 598       | 2     | 42.49                        | 0.14  | 263                                     | 29    | 18.69                        | 2.06  | 1,650     | 46    | 117.24                       | 3.27  |



**ABSTRACT No. XXVIII.—TABLE showing the AVERAGE STRENGTH, ADMIS-  
SICK among the TROOPS stationed in BOMBAY during the Year 1888, with**

| Average Strength, 11,925.                       |                                                 | Admissions into Hospital. | Deaths.              |              |        | Invalids.         |                                             | Average Number Constantly Sick. |       |
|-------------------------------------------------|-------------------------------------------------|---------------------------|----------------------|--------------|--------|-------------------|---------------------------------------------|---------------------------------|-------|
| Diseases.                                       |                                                 |                           | In the Com-<br>mand. | Of Invalids. | Total. | Number sent Home. | Number finally Dis-<br>charged the Service. |                                 |       |
| I.—GENERAL DISEASES.                            |                                                 |                           |                      |              |        |                   |                                             |                                 |       |
| GROUP "A."                                      |                                                 |                           |                      |              |        |                   |                                             |                                 |       |
| Sub-Group I.                                    | Small-pox . . . . .                             | 20                        | 1                    | —            | 1      | —                 | —                                           | 1'44                            |       |
|                                                 | Other Eruptive Fevers . . . . .                 | 15                        | —                    | —            | —      | —                 | —                                           | '71                             |       |
|                                                 | Enteric Fever . . . . .                         | 137                       | 43                   | —            | 43     | —                 | —                                           | 16'47                           |       |
|                                                 | Other Continued Fevers . . . . .                | 1,085                     | —                    | —            | —      | 2                 | —                                           | 44'33                           |       |
|                                                 | Yellow Fever . . . . .                          | —                         | —                    | —            | —      | —                 | —                                           | —                               |       |
|                                                 | Cholera . . . . .                               | 10                        | 7                    | —            | 7      | —                 | —                                           | '19                             |       |
|                                                 | Dyscutery . . . . .                             | 253                       | 9                    | —            | 9      | 11                | 7                                           | 18'17                           |       |
|                                                 | Other Diseases . . . . .                        | 5                         | —                    | —            | —      | —                 | —                                           | '12                             |       |
| Total . . . . .                                 |                                                 | 1,525                     | 65                   | —            | 65     | 13                | 7                                           | 81'43                           |       |
| Sub-Group II.—Malarial Fevers . . . . .         |                                                 | 3,976                     | 5                    | —            | 5      | 8                 | 2                                           | 118'10                          |       |
| Sub-Group III.—Septic Diseases . . . . .        |                                                 | 5                         | —                    | —            | —      | —                 | —                                           | '16                             |       |
| Sub-Group IV.                                   | Syphilis, Primary . . . . .                     | 777                       | —                    | —            | —      | —                 | —                                           | 55'55                           |       |
|                                                 | " Secondary . . . . .                           | 410                       | —                    | —            | —      | 17                | 13                                          | 33'36                           |       |
|                                                 | Gonorrhœa . . . . .                             | 2,310                     | —                    | —            | —      | —                 | —                                           | 153'75                          |       |
| Total . . . . .                                 |                                                 | 3,497                     | —                    | —            | —      | 17                | 13                                          | 242'66                          |       |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                                 | —                         | —                    | —            | —      | —                 | —                                           | —                               |       |
| GROUP "B."                                      |                                                 |                           |                      |              |        |                   |                                             |                                 |       |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                                 | 49                        | —                    | —            | —      | 1                 | —                                           | 2'01                            |       |
| Sub-Group II.                                   | Scurvy . . . . .                                | 13                        | —                    | —            | —      | —                 | —                                           | '48                             |       |
|                                                 | Alcoholism . . . . .                            | 122                       | 5                    | —            | 5      | —                 | —                                           | 2'53                            |       |
| GROUP "C."                                      |                                                 |                           |                      |              |        |                   |                                             |                                 |       |
| Debility, &c. . . . .                           |                                                 | 329                       | —                    | —            | —      | 50                | 21                                          | 18'28                           |       |
| GROUP "D."                                      |                                                 |                           |                      |              |        |                   |                                             |                                 |       |
| Rheumatism . . . . .                            |                                                 | 249                       | —                    | —            | —      | 14                | 2                                           | 17'68                           |       |
| Tubercular Diseases . . . . .                   |                                                 | 37                        | 5                    | 1            | 6      | 18                | 11                                          | 6'21                            |       |
| Other Diseases . . . . .                        |                                                 | 176                       | —                    | 1            | 1      | 12                | 2                                           | 11'38                           |       |
| II.—LOCAL DISEASES.                             |                                                 |                           |                      |              |        |                   |                                             |                                 |       |
| Diseases of the—                                |                                                 |                           |                      |              |        |                   |                                             |                                 |       |
| 1. Nervous System { Nervous Diseases . . . . .  | { Mental " . . . . .                            | 124                       | 2                    | —            | 2      | 11                | 11                                          | 6'38                            |       |
|                                                 |                                                 | 61                        | —                    | —            | —      | 19                | 12                                          | 8'67                            |       |
|                                                 | 2. Eye . . . . .                                |                           | 179                  | —            | —      | —                 | 11                                          | 10                              | 10'25 |
|                                                 | 3 & 4. Other Organs of Special Senses . . . . . |                           | 160                  | —            | —      | —                 | 20                                          | 11                              | 8'96  |
|                                                 | 5. Circulatory System . . . . .                 |                           | 154                  | 7            | 2      | 9                 | 34                                          | 23                              | 16'01 |
|                                                 | 6. Respiratory " . . . . .                      |                           | 256                  | 4            | —      | 4                 | 17                                          | 13                              | 16'32 |
|                                                 | 7. Digestive " . . . . .                        |                           | 1,491                | 19           | 2      | 21                | 30                                          | 8                               | 60'53 |
|                                                 | 8. Lymphatic and Glandular System . . . . .     |                           | 262                  | 1            | —      | 1                 | 1                                           | 2                               | 21'47 |
|                                                 | 9. Urinary System . . . . .                     |                           | 26                   | 1            | —      | 1                 | 3                                           | 2                               | 1'71  |
|                                                 | 10. Generative " . . . . .                      |                           | 917                  | 1            | 1      | 2                 | 3                                           | 3                               | 52'25 |
|                                                 | 11. Organs of Locomotion . . . . .              |                           | 82                   | —            | —      | —                 | 5                                           | 3                               | 7'25  |
|                                                 | 12. Connective Tissue . . . . .                 |                           | 196                  | —            | —      | —                 | —                                           | —                               | 8'79  |
|                                                 | 13. Skin . . . . .                              |                           | 1,122                | —            | —      | —                 | 1                                           | —                               | 46'33 |
| III.—POISONS . . . . .                          |                                                 | 12                        | —                    | —            | —      | —                 | —                                           | '26                             |       |
| IV.—INJURIES.                                   |                                                 |                           |                      |              |        |                   |                                             |                                 |       |
| 1. General . . . . .                            |                                                 | 34                        | 16                   | —            | 16     | 1                 | —                                           | 1'34                            |       |
| 2. Local . . . . .                              |                                                 | 1,280                     | 8                    | —            | 8      | 7                 | 7                                           | 48'37                           |       |
| 3. In Action . . . . .                          |                                                 | —                         | —                    | —            | —      | —                 | 2                                           | —                               |       |
| No appreciable disease . . . . .                |                                                 | 20                        | —                    | —            | —      | —                 | —                                           | '33                             |       |
| Cause unknown (refers to deaths only) . . . . . |                                                 | —                         | —                    | —            | —      | —                 | —                                           | —                               |       |
| General Total . . . . .                         |                                                 | 16,354                    | 139                  | 7            | 146    | 296               | 165                                         | 816'14                          |       |
| * Average of 10 years, 1878-87 . . . . .        |                                                 | —                         | —                    | —            | —      | —                 | —                                           | —                               |       |

† The average ratios for 10 years will be given in future years. The average ratios for the three in that for

SIGNS INTO HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY the Ratios per 1,000 of the Strength and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                     |                              |                  | † Average Ratio per 1,000 from 1886 to 1887. |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|----------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| 1.7              | .08     | —                   | —                            | .12              | .1                                           | —       | —                   | —                            | .01              |
| 1.2              | —       | —                   | —                            | .06              | .4                                           | .04     | —                   | —                            | .07              |
| 11.5             | 4.02    | —                   | —                            | 1.38             | 11.7                                         | 3.77    | —                   | —                            | 1.44             |
| 91.0             | —       | .17                 | —                            | 3.72             | 98.1                                         | .22     | —                   | —                            | 3.82             |
| —                | —       | —                   | —                            | —                | —                                            | —       | —                   | —                            | —                |
| .8               | .59     | —                   | —                            | .01              | 1.9                                          | 1.44    | —                   | —                            | .01              |
| 21.2             | .75     | .92                 | .59                          | 1.52             | 22.2                                         | .81     | 1.33                | .13                          | 1.54             |
| .4               | —       | —                   | —                            | .01              | .2                                           | —       | —                   | —                            | .01              |
| 127.8            | 5.45    | 1.09                | .59                          | 6.83             | 134.7                                        | 6.28    | 1.35                | .13                          | 6.90             |
| 333.4            | .42     | .67                 | .17                          | 9.90             | 320.3                                        | .40     | .90                 | .04                          | 10.11            |
| .4               | —       | —                   | —                            | .01              | .8                                           | .09     | —                   | —                            | .04              |
| 65.1             | —       | —                   | —                            | 4.66             | 95.2                                         | —       | —                   | —                            | 7.38             |
| 34.4             | —       | 1.42                | 1.09                         | 2.80             | 33.4                                         | —       | 1.39                | .40                          | 3.15             |
| 193.7            | —       | —                   | —                            | 12.89            | 145.5                                        | —       | .18                 | .04                          | 9.37             |
| 293.2            | —       | 1.42                | 1.09                         | 20.35            | 274.1                                        | —       | 1.53                | .44                          | 19.80            |
| —                | —       | —                   | —                            | —                | .1                                           | .09     | —                   | —                            | —                |
| 4.1              | —       | .08                 | —                            | .17              | 5.2                                          | —       | .04                 | —                            | .16              |
| 1.1              | —       | —                   | —                            | .04              | 1.6                                          | —       | .13                 | —                            | .11              |
| 10.2             | .42     | —                   | —                            | .21              | 10.2                                         | .27     | .04                 | —                            | .32              |
| 27.6             | —       | 4.19                | 1.76                         | 1.53             | 34.9                                         | —       | 5.88                | 1.17                         | 2.14             |
| 20.9             | —       | 1.17                | .17                          | 1.46             | 28.8                                         | .13     | 1.24                | .36                          | 1.90             |
| 3.1              | .51     | 1.51                | .92                          | .52              | 4.3                                          | 1.12    | 1.62                | 1.26                         | .63              |
| 14.7             | .08     | 1.01                | .17                          | .95              | 21.3                                         | .22     | .85                 | .09                          | 1.12             |
| 10.4             | .17     | .92                 | .92                          | .53              | 10.9                                         | .18     | 1.30                | .45                          | .64              |
| 5.1              | —       | 1.59                | 1.01                         | .73              | 3.7                                          | —       | 1.08                | 1.44                         | .37              |
| 15.0             | —       | .92                 | .84                          | .86              | 17.8                                         | —       | 1.17                | .90                          | 1.22             |
| 13.4             | —       | 1.68                | .92                          | .75              | 16.0                                         | —       | 1.12                | .85                          | .80              |
| 12.9             | .75     | 2.85                | 1.94                         | 1.34             | 16.5                                         | .36     | 3.68                | 1.89                         | 1.53             |
| 21.4             | .33     | 1.42                | 1.09                         | 1.37             | 31.2                                         | .63     | 1.03                | .45                          | 2.08             |
| 125.0            | 1.76    | 2.51                | .67                          | 5.97             | 147.3                                        | 1.67    | 1.97                | .45                          | 5.70             |
| 22.0             | .06     | .06                 | .17                          | 1.80             | 23.2                                         | .04     | .18                 | .13                          | 2.25             |
| 2.2              | .06     | .25                 | .17                          | .14              | 2.7                                          | .22     | .46                 | .22                          | .38              |
| 76.9             | .17     | .25                 | .25                          | 4.38             | 58.7                                         | —       | .45                 | .36                          | 2.88             |
| 6.9              | —       | .42                 | .25                          | .61              | 5.6                                          | .09     | .67                 | .31                          | .41              |
| 16.4             | —       | —                   | —                            | .74              | 19.8                                         | —       | —                   | —                            | .82              |
| 94.1             | —       | .06                 | —                            | 3.88             | 68.8                                         | —       | .22                 | —                            | 2.75             |
| 1.0              | —       | —                   | —                            | .02              | .3                                           | .04     | —                   | —                            | .01              |
| 2.8              | 1.34    | .06                 | —                            | .11              | 2.6                                          | 1.26    | .13                 | —                            | .15              |
| 107.2            | .67     | .59                 | .59                          | 4.06             | 116.5                                        | .99     | 1.03                | .49                          | 4.77             |
| —                | —       | —                   | .17                          | —                | —                                            | —       | —                   | .22                          | —                |
| 1.7              | —       | —                   | —                            | .03              | 1.4                                          | —       | —                   | —                            | .06              |
| —                | —       | —                   | —                            | —                | —                                            | —       | —                   | —                            | —                |
| 1371.4           | 12.24   | 24.82               | 13.84                        | 68.43            | 1379.6                                       | 13.91   | 28.09               | 11.67                        | 70.09            |
| 1598.1           | 17.25   | 40.54               | 15.40                        | 66.31            | —                                            | —       | —                   | —                            | —                |

years, 1886 to 1888, will be given in the Report for 1889; those for the four years, 1886 to 1889, 1890, &c., &c.



OFFICERS, showing the PREVALENCE and MORTALITY of the Different Classes of DISEASES with the Ratios per 1,000 of the Strength for the Year 1888.

| Bombay, Deesa, and Aden.          |       | Sind.     |       | Poona.    |       | Mhow.     |       | Nagpore.  |       | Sanitaria. |       | Troops on the March. |       | Total.    |       |
|-----------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|------------|-------|----------------------|-------|-----------|-------|
| Ratio per 1,000 of mean Strength. |       |           |       |           |       |           |       |           |       |            |       |                      |       |           |       |
| Admitted.                         | Died. | Admitted. | Died. | Admitted. | Died. | Admitted. | Died. | Admitted. | Died. | Admitted.  | Died. | Admitted.            | Died. | Admitted. | Died. |
| .3                                | —     | —         | —     | 2.9       | —     | 2.7       | .34   | —         | —     | —          | —     | —                    | —     | 1.7       | .08   |
| .7                                | —     | —         | —     | 2.1       | —     | 1.0       | —     | —         | —     | 7.1        | —     | —                    | —     | 1.2       | —     |
| 7.9                               | 3.09  | 6.1       | 1.36  | 15.0      | 6.15  | 15.5      | 4.71  | 7.2       | —     | 3.5        | —     | —                    | —     | 11.5      | 4.02  |
| 134.6                             | —     | 163.0     | —     | 89.0      | —     | 27.6      | —     | 3.6       | —     | 116.6      | —     | 15.2                 | —     | 91.0      | —     |
| —                                 | —     | —         | —     | —         | —     | —         | —     | —         | —     | —          | —     | —                    | —     | —         | —     |
| .3                                | .34   | —         | —     | 2.1       | 1.60  | —         | —     | —         | —     | 3.5        | —     | —                    | —     | .8        | .59   |
| 22.3                              | 1.03  | 38.0      | —     | 17.4      | .53   | 16.1      | 1.34  | 17.9      | —     | 28.3       | —     | 22.8                 | —     | 21.2      | .75   |
| .7                                | —     | .7        | —     | .3        | —     | .3        | —     | —         | —     | —          | —     | —                    | —     | .4        | —     |
| 166.8                             | 4.46  | 207.8     | 1.36  | 128.8     | 8.28  | 63.2      | 6.39  | 28.7      | —     | 159.0      | —     | 38.0                 | —     | 127.8     | 5.45  |
| 138.4                             | —     | 492.5     | .68   | 311.3     | .53   | 471.4     | .67   | 573.5     | —     | 371.0      | —     | 60.8                 | —     | 333.4     | .42   |
| 1.0                               | —     | .7        | —     | —         | —     | .3        | —     | —         | —     | —          | —     | —                    | —     | .4        | —     |
| 74.2                              | —     | 10.2      | —     | 89.5      | —     | 57.8      | —     | 43.0      | —     | 49.5       | —     | 49.4                 | —     | 65.1      | —     |
| 25.1                              | —     | 23.8      | —     | 52.4      | —     | 20.8      | —     | 21.5      | —     | 134.3      | —     | —                    | —     | 34.4      | —     |
| 235.6                             | —     | 97.9      | —     | 218.3     | —     | 200.1     | —     | 179.2     | —     | 63.6       | —     | 110.3                | —     | 193.7     | —     |
| 324.9                             | —     | 131.9     | —     | 360.2     | —     | 278.7     | —     | 243.7     | —     | 247.4      | —     | 159.7                | —     | 293.2     | —     |
| —                                 | —     | —         | —     | —         | —     | —         | —     | —         | —     | —          | —     | —                    | —     | —         | —     |
| 8.1                               | —     | 3.4       | —     | 5.6       | —     | 4.0       | —     | —         | —     | 7.1        | —     | —                    | —     | 4.1       | —     |
| 1.0                               | —     | 2.0       | —     | 1.3       | —     | .7        | —     | —         | —     | —          | —     | —                    | —     | 1.1       | —     |
| 15.1                              | .69   | 29.9      | .68   | 2.1       | —     | 5.7       | .67   | 14.3      | —     | 14.1       | —     | 3.8                  | —     | 10.2      | .42   |
| 34.3                              | —     | 19.7      | —     | 16.0      | —     | 27.2      | —     | 3.6       | —     | 201.4      | —     | 3.8                  | —     | 27.6      | —     |
| 29.2                              | —     | 16.3      | —     | 17.4      | —     | 18.1      | —     | 7.2       | —     | 60.1       | —     | 7.6                  | —     | 20.9      | —     |
| 3.8                               | 1.03  | 1.3       | —     | 3.2       | .27   | 4.0       | .30   | —         | —     | —          | —     | —                    | —     | 3.1       | .42   |
| 15.1                              | —     | 11.5      | —     | 23.0      | —     | 6.7       | —     | 7.2       | —     | 21.2       | —     | 3.8                  | —     | 14.7      | —     |
| 13.0                              | .34   | 13.6      | .68   | 6.7       | —     | 11.1      | —     | 7.2       | —     | 21.2       | —     | —                    | —     | 10.4      | .17   |
| 13.4                              | —     | 3.4       | —     | .8        | —     | 4.4       | —     | —         | —     | 3.5        | —     | —                    | —     | 5.1       | —     |
| 15.8                              | —     | 16.3      | —     | 11.7      | —     | 18.5      | —     | —         | —     | 31.8       | —     | 3.8                  | —     | 15.0      | —     |
| 9.9                               | —     | 40.8      | —     | 10.1      | —     | 9.4       | —     | 7.2       | —     | 10.6       | —     | —                    | —     | 13.4      | —     |
| 20.9                              | .34   | 8.8       | .68   | 15.8      | .53   | 5.4       | 1.01  | —         | —     | 17.7       | —     | —                    | —     | 12.9      | .59   |
| 25.4                              | .69   | 33.3      | —     | 13.6      | —     | 22.5      | .34   | 25.1      | 3.58  | 24.7       | —     | 3.8                  | —     | 21.4      | .33   |
| 147.0                             | 1.37  | 185.4     | 2.71  | 100.2     | .53   | 115.3     | 3.03  | 71.7      | —     | 144.9      | —     | 41.8                 | —     | 125.0     | 1.59  |
| 25.1                              | —     | 14.9      | —     | 24.3      | —     | 15.1      | —     | 46.6      | —     | 56.5       | —     | 7.6                  | 3.80  | 22.0      | .08   |
| 1.7                               | —     | 1.3       | —     | 2.4       | —     | 3.0       | .34   | —         | —     | 3.5        | —     | —                    | —     | 2.2       | .08   |
| 88.6                              | .34   | 39.4      | —     | 102.6     | —     | 53.5      | —     | 146.9     | —     | 49.5       | —     | 11.4                 | —     | 76.9      | .08   |
| 4.5                               | —     | 4.1       | —     | 9.1       | —     | 8.7       | —     | —         | —     | 7.1        | —     | 3.8                  | —     | 6.9       | —     |
| 14.4                              | —     | 17.0      | —     | 16.0      | —     | 17.4      | —     | 17.9      | —     | 28.3       | —     | 15.2                 | —     | 16.4      | —     |
| 84.8                              | —     | 291.4     | —     | 59.8      | —     | 58.5      | —     | 78.8      | —     | 60.1       | —     | 34.2                 | —     | 94.1      | —     |
| 3.4                               | —     | —         | —     | .3        | —     | .3        | —     | —         | —     | —          | —     | —                    | —     | 1.0       | —     |
| 5.5                               | 1.72  | 2.0       | 2.04  | .3        | .27   | 4.0       | 2.02  | —         | —     | 7.1        | —     | —                    | 3.80  | 2.8       | 1.34  |
| 88.9                              | .69   | 155.6     | —     | 78.3      | .80   | 143.6     | 1.01  | 71.7      | —     | 102.5      | —     | 110.3                | —     | 107.3     | .67   |
| —                                 | —     | —         | —     | —         | —     | —         | —     | —         | —     | —          | —     | —                    | —     | —         | —     |
| —                                 | —     | 4.1       | —     | 1.9       | —     | 1.3       | —     | 7.2       | —     | 3.5        | —     | —                    | —     | 1.7       | —     |
| —                                 | —     | —         | —     | —         | —     | —         | —     | —         | —     | —          | —     | —                    | —     | —         | —     |
| 1293.2                            | 11.67 | 1748.6    | 8.83  | 1323.0    | 11.22 | 1372.5    | 15.80 | 1358.4    | 3.58  | 1653.7     | —     | 509.5                | 7.60  | 1371.4    | 11.65 |

ABSTRACT No. XXX.—The following TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, shows the ADMISSIONS and DEATHS which took place in the PRINCIPAL STATIONS in the BOMBAY COMMAND during the Year 1888.

| Divisions and Districts. | Stations.         |   | Average Annual Strength. | Number of Admissions. | Number of Deaths. | Ratio per 1,000 of the Strength. |         |                               |         |
|--------------------------|-------------------|---|--------------------------|-----------------------|-------------------|----------------------------------|---------|-------------------------------|---------|
|                          |                   |   |                          |                       |                   | Admissions.                      | Deaths. | Average of 10 Years, 1878-87. |         |
|                          |                   |   |                          |                       |                   |                                  |         | Admissions.                   | Deaths. |
| Bombay District, &c.     | Colaba            | - | 804                      | 1,136                 | 5                 | 1412·9                           | 6·22    | 1550·0                        | 15·79   |
|                          | Deolali           | - | 629                      | 614                   | 11                | 976·1                            | 17·49   | 1345·2                        | 17·89   |
|                          | Aden              | - | 825                      | 1,103                 | 9                 | 1337·0                           | 10·91   | 1062·0                        | 14·44   |
|                          | Ahmedabad         | - | 269                      | 538                   | 9                 | 2000·0                           | 33·46   | 1974·8                        | 17·41   |
|                          | Deesa             | - | 385                      | 375                   | —                 | 974·0                            | —       | 1464·4                        | 14·93   |
| Sind                     | Karachi           | - | 1,010                    | 1,909                 | 10                | 1890·1                           | 9·90    | 2049·9                        | 20·18   |
|                          | Hyderabad         | - | 462                      | 665                   | 3                 | 1439·4                           | 6·49    | 1665·1                        | 10·78   |
| Poona                    | Poona             | - | 2,105                    | 2,274                 | 26                | 1080·3                           | 12·35   | 1472·2                        | 9·95    |
|                          | Kirkee            | - | 758                      | 952                   | 6                 | 1255·9                           | 7·91    | 1464·3                        | 10·25   |
|                          | Ahmednagar        | - | 695                      | 1,348                 | 10                | 1939·6                           | 14·39   | 1712·9                        | 14·41   |
|                          | Satara            | - | 184                      | 377                   | —                 | 2048·9                           | —       | 1692·2                        | 7·35    |
| Mhow                     | Mhow              | - | 1,461                    | 2,115                 | 10                | 1447·6                           | 6·84    | 1818·6                        | 11·09   |
|                          | Nasirabad         | - | 884                      | 1,113                 | 24                | 1259·0                           | 27·15   | 1824·7                        | 21·26   |
|                          | Neemuch           | - | 485                      | 621                   | 11                | 1280·4                           | 22·68   | 2359·4                        | 20·28   |
|                          | Asirgarh          | - | 32                       | 23                    | —                 | 718·7                            | —       | 2029·1                        | 11·24   |
|                          | Indore            | - | 110                      | 208                   | 2                 | 1890·9                           | 18·18   | 2056·7                        | 24·18   |
|                          | Khundwa           | - | 2                        | 2                     | —                 | 1000·0                           | —       | —                             | —       |
| Nagpore                  | Kamptee           | - | 264                      | 361                   | 1                 | 1367·4                           | 3·79    | —                             | —       |
|                          | Seetabuldee       | - | 15                       | 18                    | —                 | 1200·0                           | —       | —                             | —       |
|                          | Sanitaria         | - | 283                      | 468                   | —                 | 1653·7                           | —       | 1969·4                        | 22·01   |
|                          | On the march, &c. | - | 263                      | 124                   | 2                 | 509·5                            | 7·60    | 742·4                         | 22·42   |
|                          | Total             | - | 11925                    | 16354                 | 139               | 1371·4                           | 11·65   | —                             | —       |

ABSTRACT No. XXXI.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the STATIONS in the BOMBAY COMMAND at which the ADMISSIONS and DEATHS from ENTERIC FEVER took place in each of the Four Quarters of the Year 1888.

| Divisions and Districts. | Stations.        | 1st Quarter. |       | 2nd Quarter. |       | 3rd Quarter. |       | 4th Quarter. |       | Total.    |       |
|--------------------------|------------------|--------------|-------|--------------|-------|--------------|-------|--------------|-------|-----------|-------|
|                          |                  | Admitted.    | Died. | Admitted.    | Died. | Admitted.    | Died. | Admitted.    | Died. | Admitted. | Died. |
| Bombay District, &c.     | Colaba . . .     | 1            | —     | 1            | —     | —            | —     | —            | —     | 2         | —     |
|                          | Deolali . . .    | 1            | —     | 1            | 2     | 1            | 1     | —            | —     | 3         | 3     |
|                          | Ahmedabad . . .  | 12           | 1     | 3            | 4     | —            | —     | 3            | 1     | 18        | 6     |
| Sind . . .               | Karachi . . .    | 1            | —     | 2            | 1     | 1            | —     | 5            | 1     | 9         | 2     |
| Poona . . .              | Poona . . .      | 3            | —     | 9            | 4     | 21           | 8     | 4            | 3     | 37        | 15    |
|                          | Kirkee . . .     | —            | —     | —            | —     | —            | —     | 1            | 1     | 1         | 1     |
|                          | Ahmednagar . . . | —            | —     | 7            | 3     | 6            | 3     | 4            | 1     | 17        | 7     |
|                          | Satara . . .     | 1            | —     | —            | —     | —            | —     | —            | —     | 1         | —     |
|                          | Purandhar . . .  | —            | —     | 1            | —     | —            | —     | —            | —     | 1         | —     |
| Mhow . . .               | Mhow . . .       | 2            | —     | 3            | —     | 4            | 1     | 1            | —     | 10        | 1     |
|                          | Nasirabad . . .  | 7            | 2     | 5            | 3     | 2            | 1     | 14           | 3     | 28        | 9     |
|                          | Neemuch . . .    | —            | —     | —            | —     | 2            | —     | 6            | 4     | 8         | 4     |
| Nagpore . . .            | Kamptee . . .    | —            | —     | —            | —     | —            | —     | 2            | —     | 2         | —     |
|                          | Total . . .      | 23           | 3     | 32           | 17    | 37           | 14    | 40           | 14    | 137       | 46    |

ABSTRACT No. XXXII.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the STATIONS in the BOMBAY COMMAND at which the ADMISSIONS and DEATHS from CHOLERA took place in each of the Four Quarters of the Year 1888.

| Divisions and Districts. | Stations.        | 1st Quarter. |       | 2nd Quarter. |       | 3rd Quarter. |       | 4th Quarter. |       | Total.    |       |
|--------------------------|------------------|--------------|-------|--------------|-------|--------------|-------|--------------|-------|-----------|-------|
|                          |                  | Admitted.    | Died. | Admitted.    | Died. | Admitted.    | Died. | Admitted.    | Died. | Admitted. | Died. |
| Bombay . . .             | Ahmedabad . . .  | —            | —     | 1            | 1     | —            | —     | —            | —     | 1         | 1     |
| Poona . . .              | Poona . . .      | —            | —     | —            | —     | 7            | 5     | —            | —     | 7         | 5     |
|                          | Ahmednagar . . . | —            | —     | —            | —     | 1            | 1     | —            | —     | 1         | 1     |
| Mhow . . .               | Taragarh . . .   | —            | —     | —            | —     | 1            | —     | —            | —     | 1         | —     |
|                          | Total . . .      | —            | —     | 1            | 1     | 9            | 6     | —            | —     | 10        | 7     |

ABSTRACT No. XXXIII.—Table taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the PREVALENCE of DYSENTERY, DIARRHŒA, HEPATITIS, and ABSCESS OF LIVER in each DISTRICT in the BOMBAY COMMAND for the Year 1888.

| Districts.                      | Bombay, Deesa,<br>and Aden. | Sind. | Poona.    | Mhow. | Nagpore.  | On the March, &c. | Total.    |       |    |   |     |    |
|---------------------------------|-----------------------------|-------|-----------|-------|-----------|-------------------|-----------|-------|----|---|-----|----|
| Strength.                       | 2,985                       | 1,472 | 3,926     | 3,000 | 279       | 263               | 11,925    |       |    |   |     |    |
| Diseases.                       | Admitted.                   | Died. | Admitted. | Died. | Admitted. | Died.             | Admitted. | Died. |    |   |     |    |
| Dysentery -                     | 69                          | 3     | 69        | 2     | 48        | 4                 | 5         | —     | 6  | — | 253 | 9  |
| Diarrhœa -                      | 127                         | —     | 103       | 1     | 89        | —                 | —         | —     | 3  | — | 412 | 2  |
| Hepatitis and Abscess of Liver. | 59                          | 1     | 47        | —     | 50        | 6                 | —         | —     | 1  | — | 170 | 10 |
| Total                           | 255                         | 4     | 219       | 3     | 187       | 10                | 5         | —     | 10 | — | 835 | 21 |

Ratio per 1,000 of Strength.

|                                 |      |      |       |      |      |     |      |      |      |   |      |      |
|---------------------------------|------|------|-------|------|------|-----|------|------|------|---|------|------|
| Dysentery -                     | 23.1 | 1.00 | 38.0  | —    | 17.6 | .51 | 16.0 | 1.33 | 17.9 | — | 21.2 | .75  |
| Diarrhœa -                      | 42.5 | —    | 61.1  | .68  | 26.2 | .25 | 29.7 | —    | —    | — | 34.5 | .17  |
| Hepatitis and Abscess of Liver. | 19.8 | .33  | 8.8   | 1.36 | 12.0 | —   | 16.7 | 2.00 | —    | — | 14.3 | .84  |
| Total                           | 85.4 | 1.34 | 108.0 | 2.04 | 55.8 | .76 | 62.3 | 3.33 | 17.9 | — | 70.0 | 1.76 |

ABSTRACT No. XXXIV.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the PREVALENCE and MORTALITY in the BOMBAY COMMAND, due to DYSENTERY, DIARRHOEA, HEPATITIS, and ABSCESS OF LIVER in each Quarter of the Year 1888.

| Quarters.   | Strength. | Dysentery. |       |                                  |       | Diarrhoea. |       |                                  |       | Hepatitis and Abscess of Liver. |       |                                  |       | Total.    |       |                                  |       |
|-------------|-----------|------------|-------|----------------------------------|-------|------------|-------|----------------------------------|-------|---------------------------------|-------|----------------------------------|-------|-----------|-------|----------------------------------|-------|
|             |           | Number.    |       | Ratio per 1,000 of the Strength. |       | Number.    |       | Ratio per 1,000 of the Strength. |       | Number.                         |       | Ratio per 1,000 of the Strength. |       | Number.   |       | Ratio per 1,000 of the Strength. |       |
|             |           |            |       |                                  |       |            |       |                                  |       |                                 |       |                                  |       |           |       |                                  |       |
|             |           | Admitted.  | Died. | Admitted.                        | Died. | Admitted.  | Died. | Admitted.                        | Died. | Admitted.                       | Died. | Admitted.                        | Died. | Admitted. | Died. | Admitted.                        | Died. |
| 1st Quarter | 12,254    | 57         | 5     | 4.6                              | .41   | 113        | —     | 9.2                              | —     | 46                              | 4     | 3.7                              | .83   | 216       | 9     | 17.6                             | .73   |
| 2nd "       | 11,142    | 56         | 1     | 5.0                              | .09   | 91         | 2     | 8.2                              | .18   | 47                              | 2     | 4.2                              | .18   | 194       | 5     | 17.4                             | .45   |
| 3rd "       | 11,109    | 68         | 1     | 6.1                              | .09   | 104        | —     | 9.4                              | —     | 51                              | 2     | 4.6                              | .18   | 223       | 3     | 20.1                             | .27   |
| 4th "       | 13,300    | 72         | 2     | 5.4                              | .15   | 104        | —     | 7.9                              | —     | 26                              | 2     | 2.0                              | .15   | 202       | 4     | 15.3                             | .30   |
| Total       | 11,925    | 253        | 9     | 21.2                             | .75   | 412        | 2     | 34.5                             | .17   | 170                             | 10    | 14.3                             | .84   | 835       | 21    | 70.0                             | 1.76  |



ABSTRACT No. XXXV.—TABLE showing the AVERAGE STRENGTH, Sick among the TROOPS stationed in EGYPT during the Year 1888, with

| Average Strength, 3,346.                        |                                  | Admissions into Hospital. | Deaths.           |              |        | Invalida.         |                                  | Average Number Constantly Sick. |
|-------------------------------------------------|----------------------------------|---------------------------|-------------------|--------------|--------|-------------------|----------------------------------|---------------------------------|
| Diseases.                                       |                                  |                           | In the Com- mand. | Of Invalida. | Total. | Number sent Home. | Number Dis- charged the Service. |                                 |
| I.—GENERAL DISEASES.                            |                                  |                           |                   |              |        |                   |                                  |                                 |
| GROUP "A."                                      |                                  |                           |                   |              |        |                   |                                  |                                 |
| Sub-Group I.                                    | Small-pox . . . . .              | 14                        | 4                 | —            | 4      | —                 | —                                | 1'02                            |
|                                                 | Other Eruptive Fevers . . . . .  | 3                         | —                 | —            | —      | —                 | —                                | 0'21                            |
|                                                 | Enteric Fever . . . . .          | 96                        | 20                | —            | 20     | 10                | —                                | 10'22                           |
|                                                 | Other Continued Fevers . . . . . | 444                       | —                 | —            | —      | 1                 | —                                | 13'22                           |
|                                                 | Yellow Fever . . . . .           | —                         | —                 | —            | —      | —                 | —                                | —                               |
|                                                 | Cholera . . . . .                | —                         | —                 | —            | —      | —                 | —                                | —                               |
|                                                 | Dysentery . . . . .              | 168                       | 8                 | —            | 8      | 3                 | 1                                | 12'18                           |
| Other Diseases . . . . .                        |                                  | —                         | —                 | —            | —      | —                 | —                                | —                               |
| Total . . . . .                                 |                                  | 725                       | 32                | —            | 32     | 14                | 1                                | 44'96                           |
| Sub-Group II.—Malarial Fevers . . . . .         |                                  | 13                        | —                 | —            | —      | —                 | —                                | 5'53                            |
| Sub-Group III.—Septic Diseases . . . . .        |                                  | —                         | —                 | —            | —      | —                 | —                                | —                               |
| Sub-Group IV.                                   | Syphilis, Primary . . . . .      | 285                       | —                 | —            | —      | 1                 | —                                | 21'70                           |
|                                                 | Secondary . . . . .              | 82                        | —                 | —            | —      | —                 | 1                                | 7'98                            |
|                                                 | Gonorrhoea . . . . .             | 343                       | —                 | —            | —      | —                 | —                                | 20'91                           |
| Total . . . . .                                 |                                  | 710                       | —                 | —            | —      | 1                 | 1                                | 50'59                           |
| Sub-Group V.—Hydrophobia, &c. . . . .           |                                  | —                         | —                 | —            | —      | —                 | —                                | —                               |
| GROUP "B."                                      |                                  |                           |                   |              |        |                   |                                  |                                 |
| Sub-Group I.—Parasitic Diseases . . . . .       |                                  | 15                        | —                 | —            | —      | —                 | —                                | 30                              |
| Sub-Group II.                                   | Scurvy . . . . .                 | —                         | —                 | —            | —      | —                 | —                                | —                               |
|                                                 | Alcoholism . . . . .             | 28                        | —                 | —            | —      | —                 | —                                | 87                              |
| GROUP "C."                                      |                                  |                           |                   |              |        |                   |                                  |                                 |
| Debility, &c. . . . .                           |                                  | 39                        | —                 | —            | —      | 1                 | 5                                | 2'59                            |
| GROUP "D."                                      |                                  |                           |                   |              |        |                   |                                  |                                 |
| Rheumatism . . . . .                            |                                  | 48                        | 1                 | —            | 1      | 3                 | 2                                | 3'25                            |
| Tubercular Diseases . . . . .                   |                                  | 19                        | 3                 | —            | 3      | 12                | 6                                | 3'83                            |
| Other Diseases . . . . .                        |                                  | 83                        | —                 | —            | —      | —                 | —                                | 4'78                            |
| II.—LOCAL DISEASES.                             |                                  |                           |                   |              |        |                   |                                  |                                 |
| Diseases of the—                                |                                  |                           |                   |              |        |                   |                                  |                                 |
| 1. Nervous System { Nervous Diseases . . . . .  |                                  | 21                        | 1                 | —            | 1      | 1                 | 2                                | 1'04                            |
| { Mental " . . . . .                            |                                  | 8                         | —                 | 1            | 1      | 9                 | 10                               | 1'88                            |
| 2. Eye . . . . .                                |                                  | 143                       | —                 | —            | —      | 1                 | 1                                | 8'18                            |
| 3 & 4. Other Organs of Special Senses . . . . . |                                  | 44                        | —                 | —            | —      | —                 | —                                | 2'14                            |
| 5. Circulatory System . . . . .                 |                                  | 57                        | —                 | —            | —      | 9                 | 10                               | 5'00                            |
| 6. Respiratory " . . . . .                      |                                  | 74                        | 2                 | —            | 2      | 9                 | 6                                | 7'87                            |
| 7. Digestive " . . . . .                        |                                  | 377                       | 5                 | —            | 5      | 6                 | 2                                | 13'80                           |
| 8. Lymphatic and Glandular System . . . . .     |                                  | 100                       | —                 | —            | —      | 2                 | 2                                | 16'80                           |
| 9. Urinary System . . . . .                     |                                  | 4                         | —                 | —            | —      | —                 | —                                | 32                              |
| 10. Generative " . . . . .                      |                                  | 274                       | —                 | —            | —      | —                 | —                                | 17'07                           |
| 11. Organs of Locomotion . . . . .              |                                  | 18                        | —                 | —            | —      | 2                 | 2                                | 1'68                            |
| 12. Connective Tissue . . . . .                 |                                  | 87                        | —                 | —            | —      | —                 | —                                | 3'83                            |
| 13. Skin . . . . .                              |                                  | 183                       | —                 | —            | —      | —                 | —                                | 8'89                            |
| III.—POISONS . . . . .                          |                                  | 1                         | 1                 | —            | 1      | —                 | —                                | 04                              |
| IV.—INJURIES.                                   |                                  |                           |                   |              |        |                   |                                  |                                 |
| 1. General . . . . .                            |                                  | 6                         | 1                 | —            | 1      | 2                 | 1                                | 77                              |
| 2. Local . . . . .                              |                                  | 337                       | 2                 | —            | 2      | 3                 | 2                                | 14'34                           |
| 3. In Action . . . . .                          |                                  | —                         | —                 | —            | —      | —                 | —                                | 03                              |
| No appreciable disease . . . . .                |                                  | 14                        | —                 | —            | —      | —                 | —                                | 73                              |
| Cause unknown (refers to deaths only) . . . . . |                                  | —                         | —                 | —            | —      | —                 | —                                | —                               |
| General Total . . . . .                         |                                  | 3,428                     | 48                | 1            | 49     | 75                | 53                               | 216'09                          |
| * Average of 5 years, 1883-87 . . . . .         |                                  | —                         | —                 | —            | —      | —                 | —                                | —                               |

† The average ratios for 10 years will be given in future years. The average ratios for the three in that

ADMISSIONS into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.\*

| Ratio per 1,000. |         |                     |                              |                  | † Average Ratio per 1,000 from 1886 to 1887. |         |                     |                              |                  |
|------------------|---------|---------------------|------------------------------|------------------|----------------------------------------------|---------|---------------------|------------------------------|------------------|
| Admissions.      | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. | Admissions.                                  | Deaths. | Invalids sent Home. | Invalids finally Discharged. | Constantly Sick. |
| 4·2              | 1·19    | —                   | —                            | ·30              | 4·7                                          | ·43     | —                   | —                            | ·44              |
| ·9               | —       | —                   | —                            | ·06              | 3·4                                          | —       | —                   | —                            | ·19              |
| 28·7             | 5·98    | 2·99                | —                            | 5·48             | 54·5                                         | 17·02   | 18·31               | ·00                          | 7·95             |
| 133·7            | —       | ·30                 | —                            | 3·95             | 178·2                                        | —       | 3·49                | —                            | 7·08             |
| —                | —       | —                   | —                            | —                | —                                            | —       | —                   | —                            | —                |
| 50·2             | 2·39    | ·89                 | ·30                          | 3·64             | 62·8                                         | 2·45    | 6·67                | ·43                          | 4·98             |
| —                | —       | —                   | —                            | —                | 2·9                                          | ·06     | —                   | —                            | ·14              |
| 216·7            | 9·56    | 4·18                | ·30                          | 13·43            | 305·5                                        | 19·96   | 28·47               | ·49                          | 20·78            |
| 3·9              | —       | —                   | —                            | ·16              | 17·1                                         | —       | ·61                 | ·06                          | ·85              |
| —                | —       | —                   | —                            | —                | 2·9                                          | ·18     | ·06                 | —                            | ·17              |
| 85·2             | —       | ·30                 | —                            | 6·49             | 65·7                                         | —       | ·12                 | —                            | 5·27             |
| 24·5             | —       | —                   | ·30                          | 2·38             | 28·2                                         | —       | 1·16                | ·43                          | 2·14             |
| 102·5            | —       | —                   | —                            | 6·24             | 95·7                                         | —       | ·12                 | —                            | 5·87             |
| 212·2            | —       | ·30                 | ·30                          | 15·11            | 187·6                                        | —       | 1·41                | ·43                          | 13·28            |
| —                | —       | —                   | —                            | —                | —                                            | —       | —                   | —                            | —                |
| 4·5              | —       | —                   | —                            | ·09              | 4·8                                          | ·06     | —                   | —                            | ·12              |
| —                | —       | —                   | —                            | —                | ·2                                           | —       | —                   | —                            | ·01              |
| 8·4              | —       | —                   | —                            | ·26              | 6·6                                          | ·12     | ·06                 | —                            | ·24              |
| 11·6             | —       | ·30                 | 1·49                         | ·78              | 48·1                                         | —       | 9·67                | 3·37                         | 2·82             |
| 14·3             | ·30     | ·89                 | ·60                          | ·97              | 25·5                                         | ·24     | 2·14                | ·37                          | 1·77             |
| 5·7              | ·89     | 3·59                | 1·79                         | 1·14             | 3·1                                          | ·67     | 2·20                | 2·06                         | ·61              |
| 24·8             | —       | —                   | —                            | 1·43             | 8·2                                          | ·06     | ·18                 | ·12                          | ·44              |
| 6·3              | ·30     | ·30                 | ·60                          | ·31              | 8·5                                          | ·61     | 1·78                | 1·35                         | ·57              |
| 2·4              | ·30     | 2·69                | 2·99                         | ·56              | 1·5                                          | —       | 1·47                | 2·26                         | ·25              |
| 45·7             | —       | ·30                 | ·30                          | 2·45             | 60·2                                         | —       | 1·16                | ·43                          | 2·08             |
| 13·1             | —       | —                   | —                            | ·04              | 13·2                                         | —       | ·98                 | ·86                          | ·64              |
| 17·0             | —       | 2·69                | 2·99                         | 1·49             | 14·4                                         | ·43     | 5·39                | 5·29                         | 1·50             |
| 22·1             | ·60     | 3·69                | 1·79                         | 2·35             | 37·0                                         | 1·41    | 1·59                | ·98                          | 2·55             |
| 112·7            | 1·49    | ·60                 | ·60                          | 4·12             | 174·8                                        | 1·84    | 3·92                | 1·10                         | 7·02             |
| 29·9             | —       | ·60                 | —                            | 5·02             | 22·7                                         | —       | ·49                 | ·06                          | 2·28             |
| 1·2              | —       | —                   | —                            | ·10              | 3·4                                          | ·06     | ·87                 | ·31                          | ·14              |
| 81·9             | —       | —                   | —                            | 5·10             | 85·6                                         | —       | ·37                 | ·43                          | 5·60             |
| 8·4              | —       | ·60                 | ·60                          | ·50              | 6·4                                          | —       | ·61                 | ·78                          | ·43              |
| 28·0             | —       | —                   | —                            | 1·15             | 26·3                                         | —       | ·31                 | ·12                          | 1·28             |
| 54·7             | —       | —                   | —                            | 2·66             | 57·1                                         | —       | ·43                 | —                            | 2·59             |
| ·3               | ·30     | —                   | —                            | ·01              | ·2                                           | ·12     | —                   | —                            | ·04              |
| 1·8              | ·30     | ·60                 | ·30                          | ·23              | 4·7                                          | 2·76    | ·24                 | —                            | ·25              |
| 100·7            | ·60     | ·89                 | ·60                          | 4·29             | 89·8                                         | 1·29    | 1·29                | ·92                          | 4·08             |
| —                | —       | —                   | —                            | ·01              | ·1                                           | ·12     | ·43                 | ·24                          | ·11              |
| 4·2              | —       | —                   | —                            | ·22              | 3·3                                          | —       | —                   | —                            | ·09              |
| —                | —       | —                   | —                            | —                | —                                            | —       | —                   | —                            | —                |
| 1024·5           | 14·64   | 22·41               | 15·84                        | 64·58            | 1217·8                                       | 29·93   | 65·45               | 22·10                        | 72·59            |
| 1282·6           | 27·72   | 87·86               | 29·16                        | 75·78            | —                                            | —       | —                   | —                            | —                |

years 1886 to 1888 will be given in the Report for 1889; those for the four years 1886 to 1889 for 1890, &c., &c.

**ABSTRACT No. XXXVI.**—TABLE showing the **AVERAGE STRENGTH, SHIP** proceeding on and returning from Foreign Service, and proceeding during the Year 1888.

| Strength of W.O., N.C.O., and Men :   | Passage Out.           |       | Passage Home. |       |
|---------------------------------------|------------------------|-------|---------------|-------|
|                                       | 17,299<br>1,149        |       | 10,108<br>753 |       |
|                                       | Admitted.              | Died. | Admitted.     | Died. |
| <b>I.—GENERAL DISEASES.</b>           |                        |       |               |       |
| <b>GROUP "A."</b>                     |                        |       |               |       |
| Sub-Group I.                          | Small-pox              | —     | —             | —     |
|                                       | Other Eruptive Fevers  | 1     | —             | —     |
|                                       | Enteric Fever          | 1     | 4             | 2     |
|                                       | Other Continued Fevers | 13    | 12            | —     |
|                                       | Yellow Fever           | —     | —             | —     |
|                                       | Cholera                | —     | —             | —     |
|                                       | Dysentery              | 1     | 16            | —     |
|                                       | Other Diseases         | 1     | —             | —     |
| Total -                               |                        | 17    | 32            | 2     |
| Sub-Group II.—Malarial Fevers         |                        | 1     | 71            | —     |
| Sub-Group III.—Septic Diseases        |                        | 2     | 1             | 1     |
| Sub-Group IV.                         | Syphilis, Primary      | 180   | 99            | —     |
|                                       | Secondary              | 55    | 40            | —     |
|                                       | Gonorrhoea             | 322   | 158           | —     |
| Total -                               |                        | 557   | 297           | —     |
| Sub-Group V.—Hydrophobia, &c.         |                        | —     | —             | —     |
| <b>GROUP "B."</b>                     |                        |       |               |       |
| Sub-Group I.—Parasitic Diseases       |                        | —     | —             | —     |
| Sub-Group II.                         | Scurvy                 | —     | —             | —     |
|                                       | Alcoholism             | —     | 2             | —     |
| <b>GROUP "C."</b>                     |                        |       |               |       |
| Debility, &c.                         |                        | 1     | 8             | —     |
| <b>GROUP "D."</b>                     |                        |       |               |       |
| Rheumatism                            |                        | 17    | 22            | —     |
| Tubercular Diseases                   |                        | —     | 1             | —     |
| Other Diseases                        |                        | 10    | 6             | —     |
| <b>II.—LOCAL DISEASES.</b>            |                        |       |               |       |
| Diseases of the—                      |                        |       |               |       |
| 1. Nervous System { Nervous Diseases  |                        | 8     | 6             | 1     |
| Mental                                |                        | —     | 1             | —     |
| 2. Eye                                |                        | 16    | 6             | —     |
| 3 & 4. Other Organs of Special Senses |                        | 2     | 6             | —     |
| 5. Circulatory System                 |                        | 1     | —             | —     |
| 6. Respiratory                        |                        | 52    | 53            | —     |
| 7. Digestive                          |                        | 84    | 51            | 2     |
| 8. Lymphatic and Glandular System     |                        | 31    | 22            | —     |
| 9. Urinary System                     |                        | 1     | 2             | —     |
| 10. Generative                        |                        | 177   | 56            | —     |
| 11. Organs of Locomotion              |                        | 4     | 9             | —     |
| 12. Connective Tissue                 |                        | 14    | 38            | —     |
| 13. Skin                              |                        | 126   | 32            | —     |
| <b>III.—POISONS.</b>                  |                        | —     | 1             | —     |
| <b>IV.—INJURIES.</b>                  |                        |       |               |       |
| 1. General                            |                        | 3     | 2             | —     |
| 2. Local                              |                        | 76    | 34            | —     |
| 3. In Action                          |                        | —     | —             | —     |
| No appreciable disease                |                        | —     | 1             | —     |
| Cause unknown (refers to deaths only) |                        | —     | —             | —     |
| General Total                         |                        | 1,200 | 753           | 6     |

ADMISSIONS into HOSPITAL, and DEATHS among the TROOPS ON BOARD from one Colony or Station to another, with the Ratio per 1,000 of the Strength

| Intercolonial. |       | Ratio per 1,000 of the Strength. |       |               |       |                |       |
|----------------|-------|----------------------------------|-------|---------------|-------|----------------|-------|
| 10,161<br>403  |       | Passage Out.                     |       | Passage Home. |       | Intercolonial. |       |
| Admitted.      | Died. | Admitted.                        | Died. | Admitted.     | Died. | Admitted.      | Died. |
| —              | —     | —                                | —     | —             | —     | —              | —     |
| —              | —     | 9                                | —     | —             | —     | —              | —     |
| 1              | —     | 9                                | —     | 5.3           | 2.66  | 3.5            | —     |
| 15             | —     | 11.3                             | —     | 16.0          | —     | 37.2           | —     |
| —              | —     | —                                | —     | —             | —     | —              | —     |
| 1              | —     | 9                                | —     | 21.3          | —     | 3.5            | —     |
| —              | —     | 9                                | —     | —             | —     | —              | —     |
| 17             | —     | 14.8                             | —     | 42.6          | 2.66  | 43.2           | —     |
| 2              | —     | 9                                | —     | 94.4          | —     | 5.0            | —     |
| —              | —     | 1.7                              | —     | 1.3           | 1.33  | —              | —     |
| 51             | —     | 156.7                            | —     | 131.6         | —     | 126.6          | —     |
| 9              | —     | 47.9                             | —     | 53.2          | —     | 22.3           | —     |
| 84             | —     | 280.2                            | —     | 210.1         | —     | 208.4          | —     |
| 144            | —     | 484.8                            | —     | 394.9         | —     | 357.8          | —     |
| —              | —     | —                                | —     | —             | —     | —              | —     |
| —              | —     | —                                | —     | —             | —     | —              | —     |
| —              | —     | —                                | —     | 2.7           | —     | —              | —     |
| 11             | —     | 9                                | —     | 10.6          | —     | 27.3           | —     |
| 6              | —     | 14.8                             | —     | 29.2          | —     | 14.9           | —     |
| 12             | —     | 8.7                              | —     | 1.3           | —     | —              | —     |
| —              | —     | —                                | —     | 8.0           | —     | —              | —     |
| —              | —     | —                                | —     | —             | —     | 29.8           | —     |
| 2              | —     | 7.0                              | —     | 8.0           | 1.33  | 5.0            | —     |
| 1              | —     | 13.9                             | —     | 1.3           | —     | —              | —     |
| 5              | —     | 1.7                              | —     | 8.0           | —     | 3.5            | —     |
| 1              | —     | 9                                | —     | 8.0           | —     | 12.4           | —     |
| 11             | —     | 45.2                             | 5.23  | 70.5          | —     | 2.5            | —     |
| 25             | —     | 73.1                             | —     | 67.8          | 2.66  | 27.3           | —     |
| 14             | —     | 27.0                             | —     | 29.2          | —     | 62.0           | —     |
| 2              | —     | 9                                | —     | 2.7           | —     | 34.7           | —     |
| 71             | —     | 154.0                            | —     | 74.5          | —     | 5.0            | —     |
| 3              | —     | 3.5                              | —     | 2.7           | —     | 176.2          | —     |
| 27             | —     | 12.2                             | —     | 50.5          | —     | 7.4            | —     |
| 59             | —     | 109.7                            | —     | 42.6          | —     | 67.0           | —     |
| 1              | —     | —                                | —     | 1.3           | —     | 146.4          | —     |
| —              | —     | —                                | —     | —             | —     | 2.5            | —     |
| 11             | —     | 2.6                              | 87    | 2.7           | —     | 27.3           | —     |
| 34             | —     | 66.1                             | —     | 45.2          | —     | 84.3           | —     |
| —              | —     | —                                | —     | —             | —     | —              | —     |
| —              | —     | —                                | —     | 1.3           | —     | —              | —     |
| —              | —     | —                                | —     | —             | —     | —              | —     |
| 459            | —     | 1044.4                           | 6.09  | 1001.3        | 7.98  | 1139.0         | —     |

ABSTRACT No. XXXVII.—ON THE INFLUENCE OF AGE ON THE MORTALITY.—Table showing the Death Rates of the Warrant Officers, Non-commissioned Officers and Men, at the several Ages, arranged by quinquennial Periods, in the several Foreign Commands.

| Commands.                      | Under 20 Years.  |       |       | 20 and under 25. |       |       | 25 and under 30. |        |       | 30 and under 35. |        |       | 35 and under 40. |       |        | 40 and upwards.  |       |        |
|--------------------------------|------------------|-------|-------|------------------|-------|-------|------------------|--------|-------|------------------|--------|-------|------------------|-------|--------|------------------|-------|--------|
|                                | Ratio per 1,000. |       |       | Ratio per 1,000. |       |       | Ratio per 1,000. |        |       | Ratio per 1,000. |        |       | Ratio per 1,000. |       |        | Ratio per 1,000. |       |        |
|                                | 1878-87.         |       |       | 1878-87.         |       |       | 1878-87.         |        |       | 1878-87.         |        |       | 1878-87.         |       |        | 1878-87.         |       |        |
|                                | Strength.        | Died. | 1888. | Strength.        | Died. | 1888. | Strength.        | Died.  | 1888. | Strength.        | Died.  | 1888. | Strength.        | Died. | 1888.  | Strength.        | Died. | 1888.  |
| Gibraltar                      | 268              | —     | 4.19  | 2,813            | 6     | 2.13  | 5.23             | 1,218  | 6     | 4.92             | 5.61   | 310   | 1                | 3.22  | 7.70   | 94               | —     | 8.34   |
| Malta                          | 508              | 4     | 9.87  | 3,477            | 18    | 5.49  | 9.78             | 2,114  | 8     | 3.78             | 7.36   | 290   | 6                | 20.69 | 7.61   | 127              | 1     | 7.87   |
| Cyprus                         | 23               | —     | 6.08* | 397              | 1     | 2.52  | 13.66*           | 881    | 1     | 2.62             | 9.04*  | 36    | 1                | 27.78 | 17.35* | 11               | —     | 20.10* |
| Egypt                          | 208              | 4     | 19.23 | 1,926            | 34    | 17.65 | 20.36†           | 890    | 8     | 8.99             | 19.09† | 218   | —                | —     | 18.77† | 88               | 1     | 11.36  |
| Canada                         | 135              | —     | 1.75  | 693              | 2     | 2.88  | 3.16             | 367    | 4     | 10.89            | 4.13   | 70    | 3                | 42.86 | 6.73   | 41               | —     | 14.97  |
| Bermuda                        | 194              | 4     | 21.74 | 888              | 17    | 19.14 | 6.68             | 168    | 2     | 11.90            | 10.46  | 57    | —                | —     | 8.90   | 41               | 1     | 24.39  |
| West Indies                    | 93               | —     | 10.85 | 698              | 2     | 2.86  | 16.51            | 290    | 1     | 3.57             | 13.90  | 67    | 1                | 14.92 | 18.91  | 21               | —     | 18.75  |
| South Africa and St. Helena    | 235              | 1     | 4.25  | 6,583            | 14    | 8.07  | 8.06‡            | 1,314  | 6     | 4.56             | 7.93‡  | 275   | 1                | 3.66  | 8.63‡  | 110              | 2     | 13.18  |
| Mauritius                      | 3                | —     | —     | 246              | 2     | 8.13  | 18.37            | 119    | 3     | 25.21            | 13.18  | 34    | —                | —     | 13.18  | 10               | —     | 9.13   |
| Ceylon                         | 32               | —     | 6.27  | 642              | 10    | 1.56  | 10.28            | 352    | 7     | 19.88            | 12.44  | 70    | 1                | 12.66 | 12.03  | 20               | —     | 25.40  |
| China and Straits Settlements. | 55               | —     | 2.40  | 1,330            | 12    | 9.02  | 6.72             | 655    | 9     | 13.74            | 8.63   | 219   | 3                | 13.70 | 7.82   | 54               | —     | 9.04   |
| India                          | 2,298            | 15    | 6.70  | 31,188           | 460   | 14.75 | 16.75            | 23,281 | 940   | 15.66            | 14.75  | 7,037 | 116              | 10.43 | 18.64  | 2,956            | 42    | 14.30  |
|                                |                  |       |       |                  |       |       |                  |        |       |                  |        |       |                  |       |        | 840              | 23    | 27.09  |

\* For nine years only (1873 to 1887).

† For five years only (1883 to 1887).

‡ For six years only (1883 to 1887).

ABSTRACT No. XXXVIII.—TABLE showing the various Corps which served in the UNITED KINGDOM during the Year 1888, and some of the most important of their HEALTH STATISTICS.

| Brigade or Bat-<br>talion. | Corps.                     | Average Annual<br>Strength. | Admitted into<br>Hospital. | Died. | Invalided. | Average Con-<br>stantly Sick. | Ratio per 1,000 of Mean<br>Strength. |            |                                |       | Average Sick<br>Time to each<br>Soldier. | Average Duration<br>of each Case of<br>Sick ness. | Stations occupied during the Year, &c.                                     | Years<br>at Home<br>since last<br>return from<br>Foreign<br>Service. |
|----------------------------|----------------------------|-----------------------------|----------------------------|-------|------------|-------------------------------|--------------------------------------|------------|--------------------------------|-------|------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------|
|                            |                            |                             |                            |       |            |                               | Admitted.                            | Invalided. | Average<br>Constantly<br>Sick. |       | days.                                    | days.                                             |                                                                            |                                                                      |
| <b>HOUSEHOLD CAVALRY.</b>  |                            |                             |                            |       |            |                               |                                      |            |                                |       |                                          |                                                   |                                                                            |                                                                      |
| 1st                        | Life Guards                | 416                         | 247                        | 3     | 6          | 13.71                         | 688.6                                | 7.31       | 14.48                          | 33.96 | 12.06                                    | 18.31                                             | London, 13 months; Detachments at Aldershot.                               | 73                                                                   |
| 2nd                        | Life Guards                | 480                         | 239                        | 1     | 8          | 13.73                         | 535.3                                | 2.38       | 18.00                          | 20.60 | 10.83                                    | 19.49                                             | London, 3 months; Windsor, 9 months; Detachment at Aldershot.              | 73                                                                   |
|                            | Royal Horse Guards         | 408                         | 238                        | 1     | 6          | 13.17                         | 583.3                                | 2.46       | 14.70                          | 23.63 | 10.91                                    | 18.71                                             | Windsor, 3 months; London, 9 months                                        | 73                                                                   |
|                            | Household Cavalry detached | 4                           | 3                          | —     | —          | .28                           | 750.0                                | —          | —                              | 65.00 | 33.79                                    | 31.73                                             |                                                                            |                                                                      |
|                            | Total Household Cavalry    | 1,258                       | 754                        | 5     | 20         | 38.87                         | 599.4                                | 3.97       | 15.90                          | 30.90 | 11.30                                    | 18.86                                             |                                                                            |                                                                      |
| <b>CAVALRY.</b>            |                            |                             |                            |       |            |                               |                                      |            |                                |       |                                          |                                                   |                                                                            |                                                                      |
| 4th                        | Dragon Guards              | 435                         | 257                        | 4     | 10         | 16.25                         | 580.8                                | 9.19       | 23.98                          | 37.35 | 13.67                                    | 23.14                                             | Dublin, 7 months; Newbridge, 5 months                                      | 6                                                                    |
| 5th                        | Dragon Guards              | 621                         | 409                        | 4     | 5          | 23.38                         | 688.6                                | 6.44       | 8.05                           | 36.03 | 13.19                                    | 20.08                                             | Dundalk, 6 months; Newbridge, 1 month; Curragh, 1 month; Dublin, 4 months. | 33                                                                   |
| 6th                        | Dragon Guards              | 55                          | 78                         | —     | —          | 3.87                          | 1418.2                               | —          | —                              | 70.86 | 25.75                                    | 18.16                                             | Shorncliffe, 1½ months.                                                    | —                                                                    |
| 1st                        | Royal Dragoons             | 615                         | 468                        | 1     | 11         | 29.09                         | 700.9                                | 1.63       | 17.90                          | 48.38 | 17.67                                    | 23.22                                             | Aldershot, 13 months                                                       | 33                                                                   |
| 2nd                        | Royal Dragoons             | 532                         | 464                        | 3     | 3          | 24.22                         | 872.1                                | 5.64       | 5.64                           | 45.63 | 16.66                                    | 19.10                                             | Brighton, 6 months; Dundalk, 6 months; Detachment at Hilles.               | 33                                                                   |
| 3rd                        | Hussars                    | 430                         | 291                        | —     | 8          | 15.73                         | 676.7                                | —          | 18.60                          | 36.63 | 13.39                                    | 19.78                                             | Cahir, 13 months; Detachments at Limerick, Waterford, and Fethard.         | 9                                                                    |

| Brigade or Bat-<br>talion. | Corps.  | Average Annual<br>Strength. | Admitted into<br>Hospital. | Died. | Invalided. | Average<br>Slightly Sick. | Ratio per 1,000 of Mean<br>Strength. |       |            |                                | Average Sick<br>Time to each<br>Soldier. | Average Duration<br>of each Case of<br>Sickness. | Stations occupied during the Year, &c.                                                                                                                                    | Years<br>at Home<br>since last<br>return from<br>Foreign<br>Service. |
|----------------------------|---------|-----------------------------|----------------------------|-------|------------|---------------------------|--------------------------------------|-------|------------|--------------------------------|------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
|                            |         |                             |                            |       |            |                           | Admitted.                            | Died. | Invalided. | Average<br>Constantly<br>Sick. | days.                                    | days.                                            |                                                                                                                                                                           |                                                                      |
| CAVALRY—cont.              |         |                             |                            |       |            |                           |                                      |       |            |                                |                                          |                                                  |                                                                                                                                                                           |                                                                      |
| 4th                        | Hussars | 446                         | 196                        | 6     | 1          | 11.99                     | 439.5                                | 11.21 | —          | 26.88                          | 9.64                                     | 22.39                                            | Ballinacolly, 12 months; Detachment at Cork, 6 months; Shorncliffe, 4 months.                                                                                             | 10                                                                   |
| 5th                        | Lancers | 535                         | 404                        | —     | 15         | 24.72                     | 727.9                                | —     | 27.02      | 44.54                          | 16.30                                    | 22.39                                            | Aldershot, 6 months; Shorncliffe, 4 months.                                                                                                                               | —                                                                    |
| 9th                        | Lancers | 418                         | 444                        | 2     | 8          | 22.35                     | 1062.2                               | 4.78  | 19.13      | 53.08                          | 19.87                                    | 19.42                                            | York, 3 months; Manchester, 6 months; Detachment at Liverpool, 3 months; York, 9 months; Hounslow, 3 months; York, 9 months; Detachments at Hampton Court and Kensington. | 3                                                                    |
| 10th                       | Hussars | 461                         | 235                        | 3     | 5          | 14.41                     | 509.7                                | 6.50  | 10.84      | 31.25                          | 11.44                                    | 22.44                                            | Newbridge, 6 months; Dublin, 6 months; Detachments at Longines, Portumna, Longford, and Ballinrobe.                                                                       | 4                                                                    |
| 11th                       | Hussars | 604                         | 431                        | —     | 3          | 23.13                     | 713.5                                | —     | 4.96       | 38.29                          | 14.01                                    | 19.64                                            | Colchester, 12 months                                                                                                                                                     | 11                                                                   |
| 12th                       | Lancers | 461                         | 497                        | 2     | 9          | 29.84                     | 1078.0                               | 4.33  | 19.53      | 64.72                          | 23.69                                    | 21.97                                            | Manchester, 3 months; Leeds, 6 months; Detachments at Birmingham and Liverpool.                                                                                           | 1                                                                    |
| 13th                       | Hussars | 432                         | 469                        | 3     | 6          | 26.10                     | 1155.0                               | 6.94  | 13.88      | 58.10                          | 21.21                                    | 18.41                                            | Shorncliffe, 6 months; Brighton, 5 months; Aldershot, 2 months; Detachment at Hilses.                                                                                     | 3                                                                    |
| 14th                       | Hussars | 441                         | 386                        | 3     | 6          | 21.83                     | 829.9                                | 2.26  | 13.60      | 48.34                          | 17.69                                    | 21.32                                            | Piershill, 12 months; Detachment at Glasgow.                                                                                                                              | 2                                                                    |
| 15th                       | Hussars | 444                         | 323                        | 4     | 13         | 16.08                     | 727.4                                | 9.01  | 29.28      | 36.21                          | 13.25                                    | 18.23                                            | Aldershot, 6 months; Dublin, 6 months; Detachments at Navan and Curragh.                                                                                                  | 7                                                                    |
| 16th                       | Lancers | 615                         | 497                        | 3     | 11         | 35.55                     | 808.1                                | 4.87  | 17.88      | 57.90                          | 21.15                                    | 26.18                                            | Aldershot, 12 months                                                                                                                                                      | 13                                                                   |
| 18th                       | Hussars | 630                         | 511                        | 1     | 10         | 35.93                     | 811.1                                | 1.59  | 15.87      | 57.02                          | 20.87                                    | 22.73                                            | Norwich, 4 months; Hounslow, 8 months; Detachment at Birmingham.                                                                                                          | 13                                                                   |
| 19th                       | Hussars | 463                         | 460                        | 3     | 3          | 18.94                     | 933.3                                | 6.21  | 6.21       | 39.21                          | 14.35                                    | 15.07                                            |                                                                                                                                                                           | 3                                                                    |

| Brigade or Battalion. | Corps.                    | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con-stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c.                                                                                                                                                                                 | Years at Home since last return from Foreign Service. |
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|                       |                           |                          |                         |       |            |                           | Admitted.                         | Died. | Invalided. | Average Constantly Sick. |                                    | days.                                      |                                                                                                                                                                                                                        |                                                       |
| 20th                  | CAVALRY—cont.             |                          |                         |       |            |                           |                                   |       |            |                          |                                    |                                            |                                                                                                                                                                                                                        |                                                       |
|                       | Hussars                   | 407                      | 410                     | 3     | 5          | 28.59                     | 1007.3                            | 7.37  | 12.23      | 65.33                    | 23.91                              | 23.73                                      | Woolwich, 4 months; Norwich, 8 months. Detachment at Shorncliffe.                                                                                                                                                      | 1                                                     |
|                       | Cavalry Depôts            | 1,329                    | 1,023                   | 9     | 17         | 61.65                     | 769.0                             | 6.77  | 12.79      | 46.39                    | 16.96                              | 23.08                                      | Canterbury                                                                                                                                                                                                             | Since formation.                                      |
|                       | Other Corps               | 163                      | 57                      | —     | 4          | 11.75                     | 372.5                             | —     | 26.14      | 76.79                    | 23.10                              | 75.44                                      | Various.                                                                                                                                                                                                               | —                                                     |
|                       | Total Cavalry of the Line | 10,567                   | 8,319                   | 53    | 153        | 401.48                    | 787.3                             | 4.92  | 14.38      | 46.51                    | 17.02                              | 21.63                                      |                                                                                                                                                                                                                        |                                                       |
| A.                    | ROYAL ARTILLERY.          |                          |                         |       |            |                           |                                   |       |            |                          |                                    |                                            |                                                                                                                                                                                                                        |                                                       |
|                       | Horse Artillery           | 976                      | 635                     | 8     | 17         | 38.31                     | 650.6                             | 8.19  | 17.41      | 39.25                    | 14.36                              | 22.08                                      | A. Battery, Woolwich and Aldershot; B., Aldershot and St. John's Wood; C., Aldershot; H., Aldershot; J., Dublin; K., Dorchester; Depot, Woolwich.                                                                      |                                                       |
|                       | Horse Artillery           | 623                      | 373                     | 3     | 14         | 29.33                     | 568.7                             | 4.81  | 23.47      | 47.07                    | 17.23                              | 28.76                                      | A. Battery, Dublin; B., St. John's Wood and Woolwich; C., Depot, Woolwich.                                                                                                                                             |                                                       |
|                       | Field Artillery           | 1,833                    | 1,311                   | 13    | 39         | 81.11                     | 715.2                             | 7.96  | 21.27      | 44.25                    | 16.19                              | 22.04                                      | C. Battery, Shorncliffe; H. Dublin; I., Wexford; J., Woolwich; K., Woolwich; L., Ipswich; M., Ipswich; N., Newbridge and Athlone; O., Newbridge; P., Aldershot and Woolwich; V., Aldershot; Depot, New-castle-on-Tyne. |                                                       |



| Battalion or Regt.    | Corps.                                      | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con- stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c.                                                                                                                                                                                                                                                                                                           | Years at Home since last return from Foreign Service. |
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|                       |                                             |                          |                         |       |            |                            | Admitted.                         | Died. | Invalided. | Average Constantly Sick. |                                    |                                            |                                                                                                                                                                                                                                                                                                                                                  |                                                       |
| ROYAL ARTILLERY—cont. |                                             |                          |                         |       |            |                            |                                   |       |            |                          |                                    |                                            |                                                                                                                                                                                                                                                                                                                                                  |                                                       |
| 2nd                   | Field Artillery                             | 1,780                    | 1,340                   | 13    | 24         | 83.36                      | 779.1                             | 7.55  | 13.95      | 47.88                    | 17.53                              | 23.49                                      | A., Aldershot; B., Sheffield; C., Wool-<br>wich and Aldershot; D., Shorn-<br>cliffe; E., Shorncliffe; F., New-<br>bridge; G., Woolwich; I., Wool-<br>wich and Coventry; K., Woolwich<br>and Coventry; L., Woolwich; P.,<br>Kilkeny and Woolwich; Q., Ath-<br>lone and Farnoy; S., Shorncliffe<br>and Woolwich; T., Exeter; Depot,<br>Colchester. |                                                       |
| 2nd                   | Field Artillery                             | 1,410                    | 1,211                   | 8     | 33         | 75.64                      | 838.8                             | 5.67  | 23.40      | 53.64                    | 19.63                              | 23.86                                      | A. Aldershot; B., Shorncliffe and<br>Aldershot; C., Aldershot; D., Alder-<br>shot; E., Woolwich and Aldershot;<br>H., Exeter; I., Farnoy and Our-<br>rath; S., Kilkeny and Aldershot;<br>T., Woodon; Depot, Hilles.                                                                                                                              |                                                       |
| 4th                   | Field Artillery                             | 1,340                    | 1,204                   | 7     | 31         | 67.37                      | 898.5                             | 5.23  | 23.13      | 50.43                    | 18.45                              | 30.54                                      | A. Aldershot; B., Shorncliffe and<br>Aldershot; C., Aldershot; D., Alder-<br>shot; E., Woolwich and Aldershot;<br>H., Exeter; I., Farnoy and Our-<br>rath; S., Kilkeny and Aldershot;<br>T., Woodon; Depot, Hilles.                                                                                                                              |                                                       |
|                       | Garrison Artillery, Northern Divi-<br>sion. | 505                      | 409                     | 4     | 10         | 28.54                      | 809.9                             | 7.92  | 19.80      | 56.51                    | 20.68                              | 23.54                                      | No. 5 Battery, Devonport; No. 6<br>Devonport; No. 10 Portsmouth<br>and Port, Depot, Sunderland.                                                                                                                                                                                                                                                  |                                                       |
|                       | Garrison Artillery, Lancashire<br>Division. | 805                      | 559                     | 5     | 6          | 23.53                      | 694.4                             | 6.21  | 7.45       | 30.44                    | 12.97                              | 18.68                                      | No. 5 Battery Golden Hill Fort;<br>No. 6 Landguard Fort; No. 7, Port;<br>No. 8, Dover and Lydd; No. 9,<br>Jersey; No. 10, Gosport; Depot,<br>Liverpool.                                                                                                                                                                                          |                                                       |

| Brigade or Bat-<br>talion. | Corps.                                        | Average Annual<br>Strength. | Admitted into<br>Hospital. | Died. | Invalided. | Average Con-<br>stantly Sick. | Ratio per 1,000 of Mean<br>Strength. |       |       |       | Average Sick<br>Time to each<br>Soldier. | Average Duration<br>of each Case of<br>Sickness. | Stations occupied during the Year, &c.                                                                                                                                                     | Years<br>at Home<br>since last<br>return from<br>Foreign<br>Service. |
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|                            | ROYAL ARTILLERY—cont.                         |                             |                            |       |            |                               |                                      |       |       |       |                                          |                                                  |                                                                                                                                                                                            |                                                                      |
|                            | Garrison Artillery, Eastern Division          | 402                         | 367                        | 4     | 11         | 16.76                         | 918.9                                | 9.86  | 27.26 | 41.60 | 15.26                                    | 16.71                                            | No. 8 Battery, Golden Hill Fort;<br>No. 10, Sandown; Depot, Great<br>Yarmouth.                                                                                                             |                                                                      |
|                            | Garrison Artillery, Cinque Ports<br>Division. | 446                         | 345                        | 3     | 6          | 19.06                         | 773.5                                | 6.72  | 13.45 | 43.73 | 15.64                                    | 20.23                                            | No. 5 Battery, Tilbury Fort; No. 10,<br>Lydd, Gosport, and Woolwich;<br>Depot, Dover.                                                                                                      |                                                                      |
|                            | Garrison Artillery, London Division           | 261                         | 755                        | 4     | 13         | 46.72                         | 769.6                                | 4.07  | 13.25 | 47.63 | 17.43                                    | 22.65                                            | No. 4 Battery, Dover; No. 5, Dover;<br>No. 7, Sheerness; No. 9, Weymouth,<br>Portsmouth, and Lydd; No. 10,<br>Woolwich; Depot, Woolwich.                                                   |                                                                      |
|                            | Garrison Artillery, Southern Divi-<br>sion.   | 306                         | 315                        | 4     | 8          | 14.23                         | 702.6                                | 13.07 | 26.14 | 46.70 | 17.13                                    | 24.37                                            | No. 10, Portsmouth; Depot, Gosport.                                                                                                                                                        |                                                                      |
|                            | Garrison Artillery, Western Division          | 305                         | 287                        | 3     | 6          | 17.47                         | 736.5                                | 7.59  | 15.19 | 41.23 | 16.18                                    | 21.27                                            | No. 6 Battery, Pembroke Dock;<br>No. 10, Woolwich; Depot, Devon-<br>port.                                                                                                                  |                                                                      |
|                            | Garrison Artillery, Scottish Division         | 672                         | 492                        | 1     | 11         | 23.53                         | 732.1                                | 1.49  | 16.37 | 42.41 | 15.53                                    | 21.21                                            | No. 5 Battery, Shoeburyness; No. 6,<br>Portsmouth; No. 9, Shoeburyness;<br>No. 10, Dover; Depot, Leith Fort.                                                                               |                                                                      |
|                            | Garrison Artillery, Welsh Division            | 663                         | 330                        | 3     | 5          | 22.14                         | 498.4                                | 4.53  | 7.55  | 33.44 | 12.24                                    | 24.55                                            | No. 6 Battery, Pembroke Dock; No. 7<br>and 8, Devizes and Lydd; No. 9,<br>Cork; Depot, Newport (Mon.).                                                                                     |                                                                      |
|                            | Royal Artillery, North Irish Divi-<br>sion.   | 817                         | 606                        | 9     | 21         | 33.60                         | 740.5                                | 11.01 | 35.70 | 41.23 | 15.00                                    | 20.38                                            | No. 3 Battery, Spike Island; No. 5,<br>Portsmouth; No. 6, Sheerness and<br>Lydd; No. 7, Golden Hill Fort;<br>No. 8, Portsmouth and Weymouth;<br>No. 9, Devonport; Depot, London-<br>derry. |                                                                      |
|                            | Royal Artillery, South Irish Divi-<br>sion.   | 631                         | 940                        | 5     | 14         | 47.67                         | 946.7                                | 5.27  | 15.03 | 51.20 | 18.74                                    | 19.28                                            | No. 3 Battery, Aldershot; No. 5,<br>Guernsey and Alderney; No. 6,<br>Sheerness; No. 7, Portsmouth;<br>No. 8, Gosport; No. 9, Portsmouth;<br>Depot, Kinross and Cork.                       |                                                                      |

| Brigade or Bat-<br>talion. | Corps.                                            | Average Annual<br>Strength. | Admitted into<br>Hospital. | Died. | Invalided. | Average Sick-<br>nearly Sick. | Ratio per 1,000 of Mean<br>Strength. |       |            |                                | Average Sick<br>Time to each<br>Soldier. | Average Duration<br>of each Case of<br>Sickness. | Stations occupied during the Year, &c.                                                                                                                                                           | Years<br>at Home<br>since last<br>return from<br>Foreign<br>Service. |
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|                            | ROYAL ARTILLERY—cont.                             |                             |                            |       |            |                               | Admitted.                            | Died. | Invalided. | Average<br>Constantly<br>Sick. | days.                                    | days.                                            | Woolwich.                                                                                                                                                                                        |                                                                      |
|                            | Royal Artillery, Regimental Dis-<br>trict: Staff. | 1,154                       | 317                        | 6     | 12         | 25.50                         | 274.7                                | 5.10  | 10.39      | 23.10                          | 8.03                                     | 20.44                                            | 1st Division, Tynemouth; 3rd, South-<br>sea; 4th, Plymouth; 5th, Edin-<br>burgh; 6th, Tower of London; 7th,<br>Guernsey and Jersey; 8th, Dublin;<br>9th, Cork; 10th, Gravesend and<br>Sheerness. |                                                                      |
|                            | Royal Artillery, Coast Brigade                    | 610                         | 121                        | 6     | 11         | 9.43                          | 198.3                                | 9.83  | 18.03      | 15.44                          | 5.65                                     | 28.49                                            |                                                                                                                                                                                                  |                                                                      |
|                            | Royal Artillery, Various Brigades                 | 753                         | 373                        | 1     | 15         | 35.25                         | 492.1                                | 1.31  | 19.73      | 46.50                          | 17.02                                    | 34.58                                            |                                                                                                                                                                                                  |                                                                      |
|                            | Total Royal Artillery                             | 17,846                      | 12,140                     | 110   | 307        | 747.91                        | 700.4                                | 6.34  | 17.70      | 43.12                          | 15.78                                    | 23.53                                            |                                                                                                                                                                                                  |                                                                      |
|                            | ROYAL ENGINEERS.                                  |                             |                            |       |            |                               |                                      |       |            |                                |                                          |                                                  |                                                                                                                                                                                                  |                                                                      |
|                            | Royal Engineers                                   | 4,187                       | 2,241                      | 28    | 46         | 132.75                        | 535.2                                | 6.69  | 11.70      | 31.71                          | 11.60                                    | 21.68                                            |                                                                                                                                                                                                  | Various                                                              |
|                            | FOOT GUARDS.                                      |                             |                            |       |            |                               |                                      |       |            |                                |                                          |                                                  |                                                                                                                                                                                                  |                                                                      |
| 1st                        | Grenadier Guards                                  | 722                         | 671                        | 1     | 16         | 44.98                         | 790.8                                | —     | 22.15      | 62.23                          | 23.76                                    | 28.80                                            | London, 12 months                                                                                                                                                                                | 24                                                                   |
| 2nd                        | Grenadier Guards                                  | 674                         | 602                        | 2     | 16         | 43.96                         | 833.1                                | 2.96  | 23.73      | 65.22                          | 23.87                                    | 36.72                                            | London, 7 months; Pirbright, 1 month;<br>Windsor, 4 months.                                                                                                                                      | 6                                                                    |
| 3rd                        | Grenadier Guards                                  | 599                         | 503                        | 4     | 15         | 40.98                         | 843.9                                | 6.79  | 25.46      | 69.83                          | 25.87                                    | 30.71                                            | London, 94 months; Pirbright, 23<br>months.                                                                                                                                                      | 3                                                                    |

| Battalion or Bat- | Corps.                            | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con-stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c.                                                           | Years at Home since last return from Foreign Service. |
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|                   |                                   |                          |                         |       |            |                           | Admitted.                         | Died. | Invalided. | Average Constantly Sick. |                                    |                                            |                                                                                                  |                                                       |
| FOOT GUARDS—cont. |                                   |                          |                         |       |            |                           |                                   |       |            |                          |                                    |                                            |                                                                                                  |                                                       |
| 1st               | Coldstream Guards . . .           | 657                      | 690                     | —     | 17         | 54.61                     | 1060.2                            | —     | 25.87      | 83.12                    | 30.42                              | 28.98                                      | London, 12 months . . .                                                                          | 3                                                     |
| 2nd               | Coldstream Guards . . .           | 772                      | 651                     | 8     | 17         | 45.44                     | 843.2                             | 10.36 | 22.02      | 58.99                    | 21.59                              | 25.60                                      | Dublin, 6½ months; Curragh, 3 months; London, 3½ months . . .                                    | 6                                                     |
| 1st               | Scots Guards . . .                | 708                      | 538                     | 7     | 13         | 40.46                     | 759.8                             | 9.80  | 17.00      | 57.14                    | 20.91                              | 27.52                                      | Windsor, 8 months; London, 4 months . . .                                                        | 6                                                     |
| 2nd               | Scots Guards . . .                | 727                      | 706                     | 6     | 22         | 57.85                     | 971.1                             | 8.25  | 30.26      | 79.57                    | 29.12                              | 29.99                                      | London, 6½ months; Pirbright, 1½ months; Dublin, 4 months . . .                                  | 3                                                     |
|                   | Detachments Foot Guards . . .     | 470                      | 231                     | —     | 3          | 19.49                     | 491.5                             | —     | 4.25       | 41.46                    | 15.17                              | 30.88                                      | Aldershot, Chatham, and Hythe . . .                                                              | Various                                               |
|                   | Total Foot Guards . . .           | 5,519                    | 4,492                   | 27    | 117        | 347.57                    | 844.5                             | 5.08  | 23.00      | 65.54                    | 23.91                              | 28.32                                      |                                                                                                  |                                                       |
| INFANTRY.         |                                   |                          |                         |       |            |                           |                                   |       |            |                          |                                    |                                            |                                                                                                  |                                                       |
| 2nd               | Royal Scots . . .                 | 684                      | 630                     | 5     | 9          | 32.71                     | 921.0                             | 7.31  | 13.16      | 47.83                    | 17.50                              | 19.00                                      | Glasgow, 3 months; Aldershot, 9 months . . .                                                     | 8                                                     |
| 1st               | Royal West Surrey Regiment . . .  | 634                      | 777                     | 3     | 17         | 43.55                     | 1225.0                            | 4.73  | 26.81      | 68.69                    | 25.14                              | 20.51                                      | Belfast, 8½ months; Dublin, 8½ months . . .                                                      | 9                                                     |
| 2nd               | East Kent Regiment . . .          | 653                      | 505                     | 5     | 11         | 29.09                     | 773.3                             | 7.06  | 16.84      | 44.55                    | 16.30                              | 21.08                                      | Dover, 11 months; Lydd, 1 month . . .                                                            | 3                                                     |
| 1st               | Royal Lancaster Regiment . . .    | 690                      | 538                     | 3     | 10         | 28.74                     | 779.7                             | 4.34  | 14.40      | 41.95                    | 15.24                              | 19.55                                      | Buttevant, 4 months; Dublin, 8 months; Detachments at Kinsale, Killarney, and Mitchelstown . . . | 7                                                     |
| 1st               | Northumberland Fusiliers . . .    | 626                      | 543                     | 3     | 10         | 30.34                     | 867.4                             | 4.79  | 15.97      | 48.47                    | 17.75                              | 20.45                                      | Colchester, 13 months . . .                                                                      | 8                                                     |
| 1st               | Royal Warwickshire Regiment . . . | 676                      | 455                     | —     | 9          | 19.44                     | 673.1                             | —     | 13.31      | 23.76                    | 10.53                              | 15.64                                      | Fernoy, 12 months . . .                                                                          | 8                                                     |
| 1st               | Liverpool Regiment . . .          | 579                      | 523                     | 3     | 14         | 23.77                     | 903.3                             | 5.18  | 24.18      | 49.69                    | 18.19                              | 20.13                                      | Dublin, 12 months . . .                                                                          | 10                                                    |

| Brigade or Bat- | Corps.                        | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con-<br>stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                                | Average Sick<br>Time to each<br>Soldier. | Average Duration of<br>each Case of<br>Sickness. | Stations occupied during the Year, &c.                                                                      | Years<br>at Home<br>since last<br>return from<br>foreign<br>Service. |  |
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|                 |                               |                          |                         |       |            |                               | Admitted.                         | Died. | Invalided. | Average<br>Constantly<br>Sick. |                                          |                                                  |                                                                                                             |                                                                      |  |
| INFANTRY—cont.  |                               |                          |                         |       |            |                               |                                   |       |            |                                |                                          |                                                  |                                                                                                             |                                                                      |  |
| 1st             | Lincolnshire Regiment         | 663                      | 595                     | 4     | 13         | 41.83                         | 873.4                             | 5.86  | 17.59      | 61.33                          | 23.45                                    | 23.73                                            | Dublin, 4 months; Shorncliffe, 8 months.                                                                    | 11                                                                   |  |
| 1st             | Devonshire Regiment           | 733                      | 741                     | 5     | 13         | 45.69                         | 1013.3                            | 6.84  | 17.76      | 63.48                          | 23.84                                    | 23.57                                            | Aldershot, 13 months.                                                                                       | 11                                                                   |  |
| 2nd             | Suffolk Regiment              | 911                      | 625                     | 5     | 6          | 33.15                         | 696.0                             | 5.46  | 6.53       | 36.39                          | 13.33                                    | 19.41                                            | Curragh, 34 months; Aldershot, 84 months.                                                                   | 11                                                                   |  |
| 1st             | Somersetshire Light Infantry  | 720                      | 654                     | 3     | 19         | 37.41                         | 903.3                             | 2.78  | 26.39      | 51.96                          | 19.01                                    | 20.93                                            | Colchester, 13 months.                                                                                      | 9                                                                    |  |
| 1st             | West Yorkshire Regiment       | 466                      | 535                     | 4     | 5          | 34.97                         | 1179.4                            | 8.06  | 10.06      | 70.50                          | 25.90                                    | 21.88                                            | Dublin, 10 months; Fermoy, 3 months; Detachment at the Curragh.                                             | 9                                                                    |  |
| 2nd             | East Yorkshire Regiment       | 24                       | 75                      | —     | —          | 1.85                          | 3125.0                            | —     | —          | 77.06                          | 23.21                                    | 9.03                                             | Sheffield, 1 month.                                                                                         | —                                                                    |  |
| 1st             | Bedfordshire Regiment         | 834                      | 619                     | 7     | 7          | 27.23                         | 743.3                             | 8.39  | 8.39       | 33.64                          | 11.94                                    | 16.09                                            | Enniskillen, 1 month; Fermoy, 9 months; Aldershot, 3 months; Detachments at Mitchelstown and Carlisle Fort. | 13                                                                   |  |
| 1st             | Leicestershire Regiment       | 517                      | 413                     | 3     | 31         | 25.88                         | 797.0                             | 5.80  | 40.61      | 50.06                          | 18.33                                    | 23.93                                            | York, 8 months.                                                                                             | 6                                                                    |  |
| 1st             | Royal Irish Regiment          | 729                      | 600                     | 3     | 19         | 43.71                         | 823.0                             | 4.11  | 26.06      | 53.59                          | 21.44                                    | 26.05                                            | Devonport, 13 months.                                                                                       | 3                                                                    |  |
| 2nd             | Yorkshire Regiment            | 845                      | 839                     | 5     | 21         | 49.67                         | 931.0                             | 5.93  | 24.85      | 53.78                          | 21.63                                    | 21.93                                            | Aldershot, 12 months.                                                                                       | 13                                                                   |  |
| 1st             | Lancashire Fusiliers          | 639                      | 823                     | 4     | 11         | 45.93                         | 1228.7                            | 5.97  | 16.44      | 68.53                          | 23.13                                    | 20.45                                            | Manchester, 13 months.                                                                                      | 8                                                                    |  |
| 1st             | Royal Scots Fusiliers         | 633                      | 309                     | 6     | 3          | 15.64                         | 463.7                             | 9.06  | 3.02       | 33.63                          | 8.64                                     | 13.53                                            | Birr, 12 months; Detachments at Loughrea, Portumna, Tullamore, and Curragh.                                 | 7                                                                    |  |
| 2nd             | Royal Welsh Fusiliers         | 635                      | 414                     | 7     | 9          | 18.73                         | 631.9                             | 11.11 | 14.17      | 29.49                          | 10.79                                    | 16.56                                            | Galway, 13 months; Detachments at Castlebar, Gort, and Oughterard.                                          | 8                                                                    |  |
| 1st             | South Wales Borderers         | 546                      | 731                     | 3     | 13         | 50.39                         | 1396.7                            | 5.39  | 23.38      | 90.46                          | 33.11                                    | 23.53                                            | Dublin, 13 months; Detachment at Curragh.                                                                   | 9                                                                    |  |
| 2nd             | King's Own Scottish Borderers | 471                      | 453                     | —     | 19         | 29.45                         | 919.3                             | —     | 40.34      | 63.53                          | 23.93                                    | 24.59                                            | Aldershot, 7 months.                                                                                        | 3                                                                    |  |

| Brigade or Battalion. | Corps.                                 | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Convalescently Sick. | Ratio per 1,000 of Mean Strength. |       |            |                              | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c.                                                                 | Years at Home since last return from Foreign Service. |
|-----------------------|----------------------------------------|--------------------------|-------------------------|-------|------------|------------------------------|-----------------------------------|-------|------------|------------------------------|------------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
|                       |                                        |                          |                         |       |            |                              | Admitted.                         | Died. | Invalided. | Average Convalescently Sick. |                                    |                                            |                                                                                                        |                                                       |
| INFANTRY—cont.        |                                        |                          |                         |       |            |                              |                                   |       |            |                              |                                    |                                            |                                                                                                        |                                                       |
| 1st                   | Scottish Rifles . . . . .              | 609                      | 615                     | 3     | 15         | 33.44                        | 1009.9                            | 3.28  | 24.60      | 54.91                        | 20.10                              | 19.90                                      | Cork, 12 months; Detachments at Spike Island and Kinsale.                                              | 7                                                     |
| 2nd                   | Royal Inniskilling Fusiliers . . . . . | 753                      | 783                     | 3     | 33         | 59.28                        | 1043.3                            | 3.97  | 43.65      | 60.15                        | 25.31                              | 24.28                                      | Aldershot, 11½ months . . . . .                                                                        | 3                                                     |
| 1st                   | Gloucestershire Regiment . . . . .     | 736                      | 633                     | 5     | 5          | 30.02                        | 833.8                             | 6.79  | 6.79       | 53.01                        | 19.40                              | 21.90                                      | Preston, 10 months; Dublin, 3 months                                                                   | 9                                                     |
| 2nd                   | Worcestershire Regiment . . . . .      | 775                      | 477                     | 4     | 5          | 33.06                        | 615.4                             | 5.16  | 6.45       | 49.11                        | 17.97                              | 20.20                                      | Pembroke Dock and Newport, 12 months.                                                                  | 13                                                    |
| 2nd                   | East Lancashire Regiment . . . . .     | 619                      | 463                     | —     | 8          | 21.06                        | 747.9                             | —     | 13.92      | 34.00                        | 13.44                              | 16.64                                      | Newry, 13 months; Detachments at Dundalk, Omagh, Armagh, and Belfast.                                  | 8                                                     |
| 2nd                   | East Surrey Regiment . . . . .         | 669                      | 533                     | 3     | 7          | 27.46                        | 808.8                             | 4.55  | 10.63      | 41.70                        | 15.26                              | 18.87                                      | Dover, 3½ months; Guernsey and Alderney, 8½ months.                                                    | 3                                                     |
| 2nd                   | Duke of Cornwall's Light Infantry      | 675                      | 456                     | 4     | 15         | 29.86                        | 675.5                             | 5.92  | 23.32      | 44.23                        | 16.19                              | 23.96                                      | Devonport, 13 months . . . . .                                                                         | 2                                                     |
| 2nd                   | Border Regiment . . . . .              | 535                      | 613                     | 1     | 13         | 39.38                        | 1104.5                            | 1.80  | 23.42      | 70.96                        | 25.91                              | 23.51                                      | Guernsey and Alderney, 3½ months; Portsmouth, 6½ months.                                               | 11                                                    |
| 1st                   | Royal Sussex Regiment . . . . .        | 738                      | 610                     | 3     | 15         | 40.28                        | 834.7                             | 4.06  | 20.32      | 54.68                        | 19.97                              | 23.93                                      | Aldershot, 9½ months; Preston, 2½ months.                                                              | 3                                                     |
| 2nd                   | Hampshire Regiment . . . . .           | 664                      | 557                     | 4     | 14         | 36.10                        | 838.8                             | 6.01  | 21.08      | 54.30                        | 19.89                              | 23.72                                      | Chatham, 11 months . . . . .                                                                           | —                                                     |
| 2nd                   | South Staffordshire Regiment           | 747                      | 635                     | 4     | 7          | 37.94                        | 876.8                             | 5.35  | 9.37       | 50.78                        | 18.69                              | 21.20                                      | Devonport, 12 months . . . . .                                                                         | 8                                                     |
| 1st                   | Dorsetshire Regiment . . . . .         | 75                       | 63                      | —     | —          | 4.33                         | 840.0                             | —     | —          | 57.73                        | 21.13                              | 25.16                                      | Portland and Weymouth, 1 month                                                                         | —                                                     |
| 2nd                   | Dorsetshire Regiment . . . . .         | 707                      | 701                     | 3     | 20         | 40.79                        | 991.5                             | 4.24  | 28.20      | 70.42                        | 25.78                              | 26.00                                      | Portsmouth, 12 months . . . . .                                                                        | 3                                                     |
| 1st                   | South Lancashire Regiment              | 740                      | 822                     | 2     | 24         | 53.65                        | 1110.8                            | 2.70  | 34.45      | 73.60                        | 26.53                              | 23.89                                      | Portsmouth, 12 months . . . . .                                                                        | 2                                                     |
| 2nd                   | Welsh Regiment . . . . .               | 701                      | 648                     | 3     | 20         | 29.61                        | 924.4                             | 4.28  | 28.53      | 42.24                        | 15.46                              | 16.72                                      | Tipperary, 3 months; Cork, 9 months; Dublin, 8½ months; Belfast, 3½ months; Detachment at Downpatrick. | 10                                                    |
| 2nd                   | Royal Highlanders . . . . .            | 708                      | 536                     | 4     | 6          | 37.65                        | 763.5                             | 5.69  | 8.54       | 53.63                        | 19.68                              | 25.70                                      |                                                                                                        | 7                                                     |

| Battalion or Bat- | Corps.                                       | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Ancestry Sick. | Ratio per 1,000 of Mean Strength. |       |            |                         | Average Sick to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c.                                                                                                        | Years at Home since last return from Foreign Service. |
|-------------------|----------------------------------------------|--------------------------|-------------------------|-------|------------|------------------------|-----------------------------------|-------|------------|-------------------------|-------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
|                   |                                              |                          |                         |       |            |                        | Admitted.                         | Died. | Invalided. | Average Constancy Sick. |                               |                                            |                                                                                                                                               |                                                       |
| 1st               | INFANTRY—cont.<br>Oxfordshire Light Infantry | 694                      | 494                     | 3     | 11         | 24.06                  | 625.3                             | 4.33  | 15.85      | 35.53                   | days.<br>13.00                | 20.79                                      | Shorncliffe, 4 months; Parkhurst, 8 months.                                                                                                   | 1                                                     |
| 1st               | Essex Regiment                               | 719                      | 680                     | 4     | 6          | 33.67                  | 916.8                             | 5.56  | 8.34       | 46.96                   | 17.14                         | 18.71                                      | Bradford, 12 months; Detachments at Lichfield and Weedon.                                                                                     | 4                                                     |
| 1st               | Derbyshire Regiment                          | 740                      | 497                     | 3     | 4          | 21.23                  | 580.5                             | 4.05  | 5.41       | 23.69                   | 10.50                         | 17.78                                      | Kilkenny, 1 month; Limerick, 11 months; Detachments at Cork, Wexford, Waterford, New Ross, Duncannon Fort, Clonmel, Tralee, and Clare Castle. | 10                                                    |
| 2nd               | Loyal North Lancashire Regiment              | 670                      | 557                     | —     | 9          | 34.74                  | 831.3                             | —     | 13.43      | 51.85                   | 18.98                         | 22.83                                      | Jersey, 13 months                                                                                                                             | 5                                                     |
| 1st               | Northamptonshire Regiment                    | 757                      | 705                     | 1     | 17         | 36.60                  | 831.3                             | 1.32  | 22.45      | 48.34                   | 17.69                         | 19.00                                      | Aldershot, 24 months; Warley, 94 months; Detachment at Tower of London.                                                                       | 8                                                     |
| 2nd               | Royal Berkshire Regiment                     | 729                      | 363                     | 2     | 7          | 17.31                  | 406.6                             | 2.74  | 9.60       | 23.74                   | 8.69                          | 17.50                                      | Templemore, 13 months                                                                                                                         | 7                                                     |
| 2nd               | Royal West Kent Regiment                     | 734                      | 436                     | 2     | 4          | 39.36                  | 594.0                             | 2.72  | 5.44       | 53.63                   | 19.63                         | 33.04                                      | Chatham, 1 month; Portland, 11 months; Detachment at Weymouth.                                                                                | 6                                                     |
| 1st               | Yorkshire Light Infantry                     | 770                      | 1,141                   | 8     | 14         | 71.71                  | 1,461.8                           | 10.40 | 18.18      | 93.13                   | 34.09                         | 23.00                                      | Gosport, 13 months                                                                                                                            | 1                                                     |
| 2nd               | Shropshire Light Infantry                    | 736                      | 401                     | 1     | 4          | 20.90                  | 544.8                             | 1.35  | 5.43       | 28.39                   | 10.39                         | 19.07                                      | Curragh, 4 months; Kilkenny, 114 months; Detachments at Waterford, Wexford, and Duncannon Fort.                                               | 7                                                     |
| 1st               | Middlesex Regiment                           | 721                      | 529                     | 1     | 10         | 28.53                  | 733.7                             | 1.38  | 13.87      | 39.57                   | 14.48                         | 19.74                                      | Aldershot, 34 months; Buttevant, 84 months.                                                                                                   | 9                                                     |
| 1st               | King's Royal Rifle Corps                     | 753                      | 518                     | 1     | 8          | 37.99                  | 683.4                             | 1.33  | 10.55      | 49.98                   | 18.29                         | 26.77                                      | Parkhurst, 4 months; Aldershot, 8 months; Detachment at Marchwood.                                                                            | 13                                                    |
| 2nd               | King's Royal Rifle Corps                     | 734                      | 409                     | 3     | 11         | 19.04                  | 557.2                             | 4.08  | 14.98      | 25.94                   | 9.49                          | 17.03                                      | Shorncliffe, 4 months; Enniskillen, 114 months; Detachments at Belvoir and Dunsinagh.                                                         | 7                                                     |
| 1st               | Wiltshire Regiment                           | 730                      | 323                     | 4     | 5          | 16.33                  | 443.5                             | 5.48  | 6.85       | 22.37                   | 8.19                          | 18.47                                      | Athlone, 12 months; Detachments at Boyle and Longford.                                                                                        | 0                                                     |
| 1st               | Manchester Regiment                          | 661                      | 744                     | 7     | 21         | 47.74                  | 1,125.6                           | 10.59 | 31.77      | 79.23                   | 20.43                         | 23.46                                      | Aldershot, 3 months; Tipperary, 9 months.                                                                                                     | 6                                                     |

| Brigade or Battalion.        | Corps.                            | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Casualty Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Time to each Sick. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c.                                                   | Years at Home since last return from Foreign Service. |
|------------------------------|-----------------------------------|--------------------------|-------------------------|-------|------------|------------------------|-----------------------------------|-------|------------|--------------------------|----------------------------|--------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------|
|                              |                                   |                          |                         |       |            |                        | Admitted.                         | Died. | Invalided. | Average Contingent Sick. |                            |                                            |                                                                                          |                                                       |
| 2nd                          | INFANTRY—cont.                    |                          |                         |       |            |                        |                                   |       |            |                          | days.                      | days.                                      |                                                                                          | —                                                     |
| North Staffordshire Regiment | -                                 | 488                      | 637                     | 6     | 2          | 37.13                  | 1305.3                            | 12.50 | 4.09       | 76.08                    | 27.85                      | 21.33                                      | Devonport, 8 months.                                                                     |                                                       |
| 1st                          | York and Lancaster Regiment       | 627                      | 498                     | 8     | 10         | 29.33                  | 794.2                             | 12.75 | 16.00      | 46.78                    | 17.12                      | 21.90                                      | York, 12 months; Detachment at Sheffield.                                                | 4                                                     |
| 1st                          | Durham Light Infantry             | 609                      | 564                     | 4     | 9          | 23.22                  | 923.1                             | 6.57  | 14.78      | 46.34                    | 16.96                      | 18.31                                      | Colchester, 12 months                                                                    | 1                                                     |
| 1st                          | Highland Light Infantry           | 717                      | 238                     | 2     | 4          | 15.72                  | 331.9                             | 2.79  | 5.58       | 21.92                    | 8.02                       | 24.17                                      | Curragh, 12 months                                                                       | 8                                                     |
| 1st                          | Seaforth Highlanders              | 530                      | 473                     | 5     | 16         | 24.64                  | 907.7                             | 9.01  | 30.77      | 47.19                    | 17.27                      | 19.03                                      | Edinburgh, 3 months; Glasgow, 9 months. Detachment at Blackness Castle.                  | 6                                                     |
| 2nd                          | Gordon Highlanders                | 743                      | 589                     | 3     | 11         | 35.18                  | 792.7                             | 4.03  | 14.80      | 47.43                    | 17.38                      | 21.86                                      | Belise, 12 months                                                                        | 7                                                     |
| 1st                          | Queen's Own Cameron Highlanders   | 830                      | 684                     | 4     | 15         | 40.86                  | 804.7                             | 4.70  | 17.64      | 48.07                    | 17.59                      | 21.86                                      | Devonport, 3 months; Edinburgh, 9 months; Detachments at Glencorse and Blackness Castle. | 1                                                     |
| 1st                          | Royal Irish Rifles                | 700                      | 285                     | 6     | 6          | 12.43                  | 407.1                             | 8.57  | 8.57       | 17.75                    | 6.51                       | 16.96                                      | Mullingar, 12 months. Detachments at Silcock and the Curragh.                            | 7                                                     |
| 2nd                          | Royal Irish Fusiliers             | 648                      | 569                     | 3     | 15         | 30.47                  | 785.5                             | 4.03  | 23.14      | 47.02                    | 17.21                      | 21.96                                      | Aldershot, 3½ months; Dover, 7½ months; Lydd, 1 month.                                   | 4                                                     |
| 2nd                          | Connaught Rangers                 | 819                      | 816                     | 5     | 12         | 51.00                  | 996.3                             | 0.10  | 14.05      | 03.00                    | 23.06                      | 23.14                                      | Portsmouth, 3½ months; Aldershot, 8½ months.                                             | 6                                                     |
| 2nd                          | Argyll and Sutherland Highlanders | 715                      | 416                     | 3     | 15         | 30.10                  | 531.8                             | 4.19  | 20.98      | 42.18                    | 15.43                      | 26.53                                      | Portsmouth, 3½ months; Cork, 3 months; Curragh, 9 months.                                | 7                                                     |
| 2nd                          | Leinster Regiment                 | 713                      | 614                     | 2     | 20         | 46.18                  | 861.1                             | 2.80  | 23.05      | 61.77                    | 23.70                      | 27.63                                      | Limerick, 1 month; Shorncliffe, 1½ months.                                               | 11                                                    |
| 1st                          | Royal Munster Fusiliers           | 639                      | 491                     | 3     | 8          | 26.95                  | 768.4                             | 4.69  | 12.52      | 40.61                    | 14.96                      | 19.34                                      | Dover, 7 months; Lydd, 2½ months; Aldershot, 2½ months.                                  | 5                                                     |
| 1st                          | Royal Dublin Fusiliers            | 672                      | 376                     | 2     | 11         | 18.00                  | 569.5                             | 2.98  | 16.37      | 27.08                    | 10.13                      | 18.11                                      | Curragh, 12 months                                                                       | 2                                                     |



| Battalion or Bat-  | Corps.                                | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con-stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c.         | Years at Home since last return from Foreign Service. |
|--------------------|---------------------------------------|--------------------------|-------------------------|-------|------------|---------------------------|-----------------------------------|-------|------------|--------------------------|--------------------------------------------|------------------------------------------------|-------------------------------------------------------|
|                    |                                       |                          |                         |       |            |                           | Admitted.                         | Died. | Invalided. | Average Constantly Sick. |                                            |                                                |                                                       |
| INFANTRY—cont.     |                                       |                          |                         |       |            |                           |                                   |       |            |                          |                                            |                                                |                                                       |
| 2nd                | Rifle Brigade . . . . .               | 931                      | 530                     | 3     | 19         | 38.71                     | 569.2                             | 3.22  | 20.40      | 41.57                    | days. 15.22                                | Woolwich, 12 months . . . . .                  | 8                                                     |
|                    | Mounted Infantry . . . . .            | 115                      | 89                      | —     | —          | 3.04                      | 773.9                             | —     | —          | 26.44                    | 9.67                                       | Aldershot and Curragh. . . . .                 | —                                                     |
|                    | Other Infantry . . . . .              | 1,103                    | 661                     | —     | 30         | 73.83                     | 599.3                             | —     | 27.20      | 66.03                    | 24.16                                      | . . . . .                                      | Various                                               |
|                    | Total . . . . .                       | 46,246                   | 37,726                  | 224   | 798        | 2273.65                   | 815.8                             | 4.84  | 17.26      | 49.16                    | 17.99                                      | . . . . .                                      |                                                       |
| REGIMENTAL DEPÔTS. |                                       |                          |                         |       |            |                           |                                   |       |            |                          |                                            |                                                |                                                       |
| Depôt.             | Royal Scots . . . . .                 | 162                      | 77                      | —     | —          | 3.43                      | 506.6                             | —     | —          | 23.67                    | 8.26                                       | Glencorse . . . . .                            | Since formation.                                      |
| "                  | Royal West Surrey Regiment . . . . .  | 153                      | 110                     | —     | 2          | 4.90                      | 700.6                             | —     | 13.90      | 27.09                    | 9.92                                       | Guildford . . . . .                            | "                                                     |
| "                  | East Kent Regiment . . . . .          | 125                      | 93                      | 2     | 3          | 4.68                      | 744.0                             | 16.00 | 24.00      | 30.64                    | 13.40                                      | Canterbury . . . . .                           | "                                                     |
| "                  | Royal Lancaster Regiment . . . . .    | 170                      | 97                      | 4     | 3          | 2.77                      | 570.5                             | 23.52 | 17.64      | 16.29                    | 5.96                                       | Lancaster . . . . .                            | "                                                     |
| "                  | Northumberland Fusiliers . . . . .    | 134                      | 111                     | 2     | 1          | 5.44                      | 823.3                             | 14.92 | 7.46       | 40.60                    | 14.35                                      | Newcastle-on-Tyne . . . . .                    | "                                                     |
| "                  | Royal Warwickshire Regiment . . . . . | 137                      | 53                      | —     | 3          | 2.43                      | 379.6                             | —     | 21.90      | 18.10                    | 6.63                                       | Warwick . . . . .                              | "                                                     |
| "                  | Royal Fusiliers . . . . .             | 346                      | 234                     | 4     | 11         | 16.66                     | 830.8                             | 11.56 | 31.79      | 43.15                    | 17.63                                      | Hounslow . . . . .                             | "                                                     |
| "                  | Liverpool Regiment . . . . .          | 157                      | 96                      | 1     | 2          | 3.92                      | 611.4                             | 6.37  | 12.74      | 24.96                    | 9.14                                       | Warrington . . . . .                           | "                                                     |
| "                  | Norfolk Regiment . . . . .            | 438                      | 317                     | 5     | 5          | 11.26                     | 723.7                             | 11.41 | 11.41      | 25.67                    | 9.40                                       | Yarmouth, 3 months; Norwich, 9 months. . . . . | "                                                     |
| "                  | Lincolnshire Regiment . . . . .       | 109                      | 47                      | 1     | —          | 2.96                      | 431.2                             | 9.17  | —          | 19.08                    | 0.98                                       | Lincoln . . . . .                              | "                                                     |

| Battalion.              | Corps.                        | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con-stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Time to each Sick. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c. | Years at Home since last return from Foreign Service. |
|-------------------------|-------------------------------|--------------------------|-------------------------|-------|------------|---------------------------|-----------------------------------|-------|------------|--------------------------|----------------------------|--------------------------------------------|----------------------------------------|-------------------------------------------------------|
|                         |                               |                          |                         |       |            |                           | Admitted.                         | Died. | Invalided. | Average Constantly Sick. |                            |                                            |                                        |                                                       |
| REGIMENTAL DEPÔTS—cont. |                               |                          |                         |       |            |                           |                                   |       |            |                          |                            |                                            |                                        |                                                       |
| Depôt.                  | Devonshire Regiment           | 124                      | 92                      | 1     | 1          | 3.95                      | 741.9                             | 8.06  | 8.06       | 31.85                    | 11.06                      | 15.71                                      | Exeter                                 | Since formation.                                      |
| "                       | Suffolk Regiment              | 115                      | 51                      | 1     | 1          | 1.19                      | 299.5                             | 8.69  | 8.69       | 10.35                    | 5.79                       | 14.06                                      | Bury St. Edmunds                       | "                                                     |
| "                       | Somersetshire Light Infantry  | 93                       | 40                      | —     | 1          | 1.57                      | 450.1                             | —     | 10.75      | 16.88                    | 6.18                       | 14.36                                      | Taunton                                | "                                                     |
| "                       | West Yorkshire Regiment       | 178                      | 77                      | 1     | 4          | 4.17                      | 438.6                             | 5.61  | 22.47      | 23.42                    | 8.57                       | 20.00                                      | York                                   | "                                                     |
| "                       | East Yorkshire Regiment       | 484                      | 273                     | —     | 1          | 17.18                     | 528.0                             | —     | 2.06       | 35.50                    | 13.00                      | 23.11                                      | Beverley                               | "                                                     |
| "                       | Bedfordshire Regiment         | 163                      | 114                     | 1     | —          | 4.70                      | 745.1                             | 6.53  | —          | 30.72                    | 11.24                      | 15.00                                      | Bedford                                | "                                                     |
| "                       | Leicestershire Regiment       | 161                      | 103                     | 2     | 1          | 4.66                      | 639.7                             | 12.42 | 6.21       | 23.94                    | 10.59                      | 16.55                                      | Leicester                              | "                                                     |
| "                       | Royal Irish Regiment          | 107                      | 60                      | 1     | —          | 2.50                      | 560.7                             | 9.35  | —          | 23.36                    | 8.55                       | 15.25                                      | Clonmel                                | "                                                     |
| "                       | Yorkshire Regiment            | 139                      | 53                      | 1     | 1          | 2.01                      | 237.3                             | 7.19  | 7.19       | 14.46                    | 5.29                       | 22.29                                      | Richmond (Yorks.)                      | "                                                     |
| "                       | Lancashire Fusiliers          | 118                      | 69                      | 2     | 2          | 2.45                      | 584.7                             | 17.00 | 17.00      | 20.76                    | 7.60                       | 13.00                                      | Bury                                   | "                                                     |
| "                       | Royal Scots Fusiliers         | 129                      | 84                      | 1     | 5          | 8.89                      | 651.2                             | 7.74  | 38.76      | 30.15                    | 11.04                      | 16.95                                      | Ayr                                    | "                                                     |
| "                       | Cheshire Regiment             | 212                      | 155                     | —     | 7          | 7.39                      | 731.1                             | —     | 33.01      | 34.80                    | 13.75                      | 17.45                                      | Chester                                | "                                                     |
| "                       | Royal Welsh Fusiliers         | 139                      | 76                      | —     | 2          | 3.68                      | 546.7                             | —     | 14.38      | 27.91                    | 10.21                      | 18.08                                      | Wrexham                                | "                                                     |
| "                       | South Wales Borderers         | 139                      | 102                     | —     | —          | 3.63                      | 733.8                             | —     | —          | 26.11                    | 9.56                       | 13.02                                      | Brecon                                 | "                                                     |
| "                       | King's Own Scottish Borderers | 179                      | 127                     | 2     | 6          | 6.20                      | 1044.7                            | 11.17 | 33.53      | 34.64                    | 12.63                      | 12.14                                      | Berwick-on-Tweed                       | "                                                     |
| "                       | Scottish Rifles               | 135                      | 59                      | 2     | 3          | 2.21                      | 437.0                             | 14.81 | 22.22      | 16.37                    | 5.99                       | 13.71                                      | Hamilton                               | "                                                     |

| Battalion, or Bat-      | Corps.                            | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con-stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c. | Years at Home since last return from foreign Service. |
|-------------------------|-----------------------------------|--------------------------|-------------------------|-------|------------|---------------------------|-----------------------------------|-------|------------|--------------------------|------------------------------------|--------------------------------------------|----------------------------------------|-------------------------------------------------------|
|                         |                                   |                          |                         |       |            |                           | Admitted.                         | Died. | Invalided. | Average Constantly Sick. |                                    |                                            |                                        |                                                       |
| REGIMENTAL DEPÔTS—cont. |                                   |                          |                         |       |            |                           |                                   |       |            |                          |                                    |                                            |                                        |                                                       |
| Depôt                   | Royal Inniskilling Fusiliers      | 157                      | 56                      | —     | 1          | 1'90                      | 356'6                             | —     | 6'36       | 12'10                    | 4'42                               | Omagh                                      | —                                      | —                                                     |
| "                       | Gloucestershire Regiment          | 111                      | 63                      | 4     | —          | 2'65                      | 567'5                             | 36'03 | —          | 23'87                    | 8'73                               | Bristol                                    | —                                      | —                                                     |
| "                       | Worcestershire Regiment           | 119                      | 51                      | 1     | 3          | 1'92                      | 423'5                             | 8'40  | 16'80      | 16'13                    | 5'80                               | Worcester                                  | —                                      | —                                                     |
| "                       | East Lancashire Regiment          | 133                      | 83                      | 1     | 3          | 5'83                      | 623'8                             | 7'57  | 22'72      | 44'16                    | 16'16                              | Burnley                                    | —                                      | —                                                     |
| "                       | East Surrey Regiment              | 165                      | 67                      | 2     | 1          | 2'75                      | 403'0                             | 12'12 | 6'06       | 16'66                    | 6'10                               | Kingston-on-Thames                         | —                                      | —                                                     |
| "                       | Duke of Cornwall's Light Infantry | 144                      | 100                     | —     | —          | 3'07                      | 684'4                             | —     | —          | 21'32                    | 7'80                               | Bodmin                                     | —                                      | —                                                     |
| "                       | West Riding Regiment              | 301                      | 255                     | 1     | 1          | 15'64                     | 880'4                             | 3'32  | 3'32       | 51'96                    | 19'01                              | Halifax                                    | —                                      | —                                                     |
| "                       | Border Regiment                   | 151                      | 103                     | —     | 3          | 4'15                      | 682'1                             | —     | 19'86      | 27'48                    | 10'05                              | Carlisle                                   | —                                      | —                                                     |
| "                       | Royal Sussex Regiment             | 132                      | 50                      | 1     | 1          | 1'79                      | 378'8                             | 7'53  | 7'53       | 13'56                    | 4'96                               | Chichester                                 | —                                      | —                                                     |
| "                       | Hampshire Regiment                | 185                      | 62                      | 2     | 1          | 5'01                      | 335'1                             | 10'81 | 5'40       | 27'08                    | 9'91                               | Winchester                                 | —                                      | —                                                     |
| "                       | South Staffordshire Regiment      | 111                      | 42                      | 1     | 2          | 1'50                      | 373'3                             | 9'01  | 18'02      | 13'51                    | 4'94                               | Lichfield                                  | —                                      | —                                                     |
| "                       | Dorsetshire Regiment              | 130                      | 57                      | —     | 1          | 2'66                      | 433'5                             | —     | 7'03       | 20'46                    | 7'49                               | Dorchester                                 | —                                      | —                                                     |
| "                       | South Lancashire Regiment         | 111                      | 45                      | 4     | 1          | 2'60                      | 405'4                             | 36'03 | 9'01       | 23'42                    | 8'57                               | Warrington                                 | —                                      | —                                                     |
| "                       | Welsh Regiment                    | 129                      | 108                     | 1     | 3          | 4'99                      | 837'2                             | 7'75  | 23'25      | 38'68                    | 14'15                              | Cardiff                                    | —                                      | —                                                     |
| "                       | Royal Highlanders                 | 125                      | 63                      | —     | 4          | 2'65                      | 544'0                             | —     | 32'00      | 21'20                    | 7'03                               | Perth                                      | —                                      | —                                                     |
| "                       | Oxfordshire Light Infantry        | 101                      | 80                      | —     | 2          | 3'12                      | 792'0                             | —     | 19'80      | 30'89                    | 11'31                              | Oxford                                     | —                                      | —                                                     |
| "                       | Essex Regiment                    | 114                      | 55                      | 2     | 1          | 2'65                      | 492'4                             | 17'54 | 8'77       | 23'24                    | 8'51                               | Warley                                     | —                                      | —                                                     |

| Battalion. | Corps.                           | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con-stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c. | Years at Home since last return from Foreign Service. |                  |
|------------|----------------------------------|--------------------------|-------------------------|-------|------------|---------------------------|-----------------------------------|-------|------------|--------------------------|--------------------------------------------|----------------------------------------|-------------------------------------------------------|------------------|
|            |                                  |                          |                         |       |            |                           | Admitted.                         | Died. | Invalided. | Average Constantly Sick. |                                            |                                        |                                                       |                  |
| Depôt      | REGIMENTAL DEPÔTS—cont.          |                          |                         |       |            |                           |                                   |       |            |                          | days.                                      |                                        |                                                       | Since formation. |
| "          | Derbyshire Regiment              | 160                      | 83                      | 2     | 2          | 5.32                      | 518.7                             | 12.50 | 12.50      | 33.25                    | 12.17                                      | 23.46                                  | Derby                                                 | "                |
| "          | Loyal North Lancashire Regiment. | 119                      | 71                      | —     | 1          | 3.92                      | 596.6                             | —     | 8.40       | 32.93                    | 13.05                                      | 20.20                                  | Preston                                               | "                |
| "          | Northamptonshire Regiment        | 116                      | 104                     | —     | 2          | 3.87                      | 896.5                             | 17.24 | 17.24      | 33.36                    | 13.21                                      | 13.68                                  | Northampton                                           | "                |
| "          | Royal Berkshire Regiment         | 92                       | 62                      | —     | —          | 2.39                      | 673.9                             | —     | —          | 25.98                    | 9.51                                       | 14.11                                  | Reading                                               | "                |
| "          | Royal West Kent Regiment.        | 122                      | 62                      | —     | 2          | 3.49                      | 508.2                             | —     | 16.39      | 23.61                    | 10.47                                      | 20.60                                  | Maidstone                                             | "                |
| "          | Yorkshire Light Infantry         | 93                       | 52                      | 2     | —          | 3.36                      | 559.1                             | 21.50 | —          | 36.13                    | 13.22                                      | 23.65                                  | Pontefract                                            | "                |
| "          | Shropshire Light Infantry        | 142                      | 74                      | 3     | 1          | 2.84                      | 521.1                             | 21.12 | 7.04       | 20.00                    | 7.33                                       | 14.07                                  | Shrewsbury                                            | "                |
| "          | Middlesex Regiment               | 84                       | 34                      | 3     | 1          | 1.34                      | 405.0                             | 35.71 | 11.90      | 15.95                    | 5.84                                       | 14.43                                  | Hounslow                                              | "                |
| "          | Wiltshire Regiment               | 95                       | 70                      | 1     | 1          | 3.69                      | 738.8                             | 10.53 | 10.53      | 23.32                    | 10.38                                      | 14.06                                  | Devizes                                               | "                |
| "          | Manchester Regiment              | 155                      | 107                     | 1     | —          | 3.73                      | 680.0                             | 6.46  | —          | 24.06                    | 8.90                                       | 13.76                                  | Ashton-under-Lyne                                     | "                |
| "          | North Staffordshire Regiment     | 186                      | 139                     | 2     | 4          | 6.51                      | 747.3                             | 10.76 | 21.50      | 35.00                    | 12.81                                      | 17.24                                  | Lichfield                                             | "                |
| "          | York and Lancaster Regiment      | 177                      | 164                     | —     | 3          | 7.95                      | 870.0                             | —     | 17.00      | 44.91                    | 16.43                                      | 18.89                                  | Pontefract                                            | "                |
| "          | Durham Light Infantry            | 104                      | 123                     | 2     | 5          | 7.78                      | 750.0                             | 13.19 | 30.49      | 47.43                    | 17.36                                      | 23.15                                  | Newcastle-on-Tyne                                     | "                |
| "          | Highland Light Infantry          | 140                      | 53                      | 2     | 3          | 1.92                      | 378.6                             | 14.29 | 21.43      | 13.71                    | 5.02                                       | 13.26                                  | Hamilton                                              | "                |
| "          | Seaforth Highlanders             | 117                      | 60                      | 1     | 3          | 2.16                      | 512.8                             | 8.55  | 25.64      | 18.46                    | 6.76                                       | 13.18                                  | Fort George                                           | "                |
| "          | Gordon Highlanders               | 107                      | 68                      | 2     | 1          | 2.26                      | 635.2                             | 18.69 | 9.35       | 21.13                    | 7.73                                       | 12.16                                  | Aberdeen                                              | "                |
| "          | Queen's Own Cameron Highlanders  | 71                       | 25                      | —     | —          | .63                       | 353.1                             | —     | —          | 8.87                     | 3.25                                       | 9.23                                   | Inverness                                             | "                |

| Battalion, Brigade or Depôt    | Corps.                                      | Average Annual Strength. | Admitted into Hospital. | Died. | Invalided. | Average Con-stantly Sick. | Ratio per 1,000 of Mean Strength. |       |            |                          | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year, &c. | Years at Home since last return from Foreign Service. |                  |
|--------------------------------|---------------------------------------------|--------------------------|-------------------------|-------|------------|---------------------------|-----------------------------------|-------|------------|--------------------------|------------------------------------|--------------------------------------------|----------------------------------------|-------------------------------------------------------|------------------|
|                                |                                             |                          |                         |       |            |                           | Admitted.                         | Died. | Invalided. | Average Constantly Sick. |                                    |                                            |                                        |                                                       |                  |
| REGIMENTAL DEPÔTS—cont.        |                                             |                          |                         |       |            |                           |                                   |       |            |                          |                                    |                                            |                                        |                                                       |                  |
| Depôt                          | Royal Irish Rifles                          | 148                      | 58                      | 3     | —          | 2.83                      | 391.8                             | 20.27 | —          | 19.12                    | 6.99                               | 17.85                                      | Belfast                                | —                                                     | Since formation. |
| "                              | Royal Irish Fusiliers                       | 160                      | 42                      | —     | 1          | 1.10                      | 262.5                             | —     | 6.25       | 6.87                     | 2.51                               | 9.53                                       | Armagh                                 | —                                                     | "                |
| "                              | Connaught Rangers                           | 130                      | 66                      | —     | 1          | 2.93                      | 507.7                             | —     | 7.69       | 22.54                    | 8.25                               | 16.25                                      | Galway                                 | —                                                     | "                |
| "                              | Argyll and Sutherland Highlanders           | 119                      | 66                      | 1     | 2          | 2.98                      | 554.6                             | 8.40  | 16.81      | 25.00                    | 9.16                               | 16.53                                      | Stirling                               | —                                                     | "                |
| "                              | King's Royal Rifle Corps and Rifle Brigade. | 473                      | 573                     | 3     | 6          | 25.46                     | 1211.4                            | 6.34  | 12.68      | 53.81                    | 19.69                              | 16.25                                      | Winchester                             | —                                                     | "                |
| "                              | Leicester Regiment                          | 124                      | 59                      | —     | —          | 2.97                      | 475.9                             | —     | —          | 23.95                    | 8.77                               | 13.43                                      | Birr                                   | —                                                     | "                |
| "                              | Royal Munster Fusiliers                     | 109                      | 80                      | 1     | 2          | 3.19                      | 733.9                             | 9.17  | 18.35      | 29.27                    | 10.71                              | 14.59                                      | Trillick                               | —                                                     | "                |
| "                              | Royal Dublin Fusiliers                      | 146                      | 87                      | 2     | —          | 3.04                      | 556.9                             | 13.70 | —          | 20.96                    | 7.67                               | 12.87                                      | Naas                                   | —                                                     | "                |
| "                              | Detached                                    | 90                       | 5                       | —     | —          | .52                       | 55.5                              | —     | —          | 5.77                     | 2.11                               | 38.06                                      |                                        | —                                                     | "                |
|                                |                                             | 10,585                   | 6,870                   | 87    | 133        | 300.46                    | 620.7                             | 8.22  | 12.56      | 28.38                    | 10.39                              | 16.74                                      |                                        | —                                                     |                  |
| Garrison Staff and Departments |                                             | 6,188                    | 3,094                   | 37    | 65         | 187.43                    | 500.0                             | 5.98  | 10.50      | 20.29                    | 11.08                              | 22.17                                      |                                        | —                                                     |                  |

ABSTRACT No. XXXIX.—Table, taken from the Reports of the Principal Medical Officers, showing the various Corps which served in the different Foreign Commands during the Year 1888, and some of the most important of their Health Statistics.

| Brigade or Battalion. | Corps and Commands.                     | Average Annual Strength. | Admitted into Hospital. | Deaths.         |              |        | Invalide sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |       |            | Average Sick Time to each Soldier. | Average Duration of Sickness. | Stations occupied during the Year. | Completed Years of Service in Foreign Commands. |
|-----------------------|-----------------------------------------|--------------------------|-------------------------|-----------------|--------------|--------|---------------------|---------------------------------|------------------------------|-------|------------|------------------------------------|-------------------------------|------------------------------------|-------------------------------------------------|
|                       |                                         |                          |                         | In the Command. | Of Invalide. | Total. |                     |                                 | Admitted.                    | Died. | Invalided. | Constantly Sick.                   |                               |                                    |                                                 |
|                       | GIBRALTAR.                              |                          |                         |                 |              |        |                     |                                 |                              |       |            | days.                              | days.                         |                                    |                                                 |
| 4/1                   | Royal Artillery, Northern Division.     | 134                      | 62                      | —               | —            | —      | —                   | 4.57                            | 463.7                        | —     | —          | 34.10                              | 12.43                         | Gibraltar, 13 months               | 2                                               |
| 2/1                   | Royal Artillery, Lancashire Division.   | 136                      | 68                      | —               | —            | —      | —                   | 3.63                            | 500.0                        | —     | —          | 26.69                              | 9.77                          | Gibraltar, 13 months               | 3                                               |
| 3/1                   | Royal Artillery, Lancashire Division.   | 130                      | 80                      | —               | —            | —      | 5                   | 5.86                            | 615.4                        | —     | 38.46      | 45.07                              | 16.50                         | Gibraltar, 13 months               | 3                                               |
| 3/1                   | Royal Artillery, Eastern Division.      | 139                      | 67                      | 1               | —            | 1      | 6                   | 4.91                            | 463.0                        | 7.19  | 43.16      | 35.32                              | 12.92                         | Gibraltar, 13 months               | 2                                               |
| 1/1                   | Royal Artillery, Cinque Ports Division. | 140                      | 77                      | —               | —            | —      | 2                   | 5.61                            | 550.0                        | —     | 14.28      | 40.07                              | 14.56                         | Gibraltar, 13 months               | 2                                               |
| 2/1                   | Royal Artillery, Western Division.      | 131                      | 70                      | 1               | —            | 1      | 2                   | 3.96                            | 534.3                        | 7.63  | 15.26      | 30.15                              | 11.03                         | Gibraltar, 13 months               | 2                                               |
| 3/1                   | Royal Artillery, Western Division.      | 133                      | 86                      | 1               | —            | 1      | 1                   | 5.69                            | 646.6                        | 7.52  | 7.52       | 42.78                              | 13.66                         | Gibraltar, 13 months               | 2                                               |
|                       | Royal Artillery, Coast Brigade          | 6                        | —                       | —               | —            | —      | —                   | —                               | —                            | —     | —          | —                                  | —                             | Gibraltar                          | Various                                         |
|                       | Royal Engineers                         | 265                      | 125                     | —               | 1            | 1      | 3                   | 8.08                            | 433.6                        | 5.51  | 10.52      | 31.51                              | 11.53                         | Gibraltar                          | —                                               |
| 1st                   | Norfolk Regiment                        | 774                      | 635                     | 3               | —            | 3      | 20                  | 41.27                           | 820.4                        | 3.87  | 25.84      | 53.32                              | 19.51                         | Gibraltar, 13 months               | 1                                               |
| 1st                   | South Staffordshire Regiment            | 865                      | 537                     | 3               | —            | 3      | 11                  | 29.87                           | 660.5                        | 2.34  | 12.86      | 34.93                              | 12.78                         | Gibraltar, 13 months               | 2                                               |
| 1st                   | Royal West Kent Regiment                | 868                      | 468                     | 2               | —            | 2      | 24                  | 30.89                           | 533.8                        | 2.33  | 27.97      | 36.00                              | 13.18                         | Gibraltar, 13 months               | 2                                               |
| 3rd                   | King's Royal Rifle Corps                | 851                      | 3.2                     | 3               | 1            | 4      | 9                   | 22.67                           | 448.9                        | 4.70  | 10.57      | 26.64                              | 9.75                          | Gibraltar, 13 months               | 2                                               |
| Det.                  | Army Service Corps                      | 50                       | 23                      | —               | —            | —      | 3                   | 1.09                            | 460.0                        | —     | 60.00      | 21.80                              | 7.98                          | Gibraltar                          | Various                                         |

| Brigade or Battalion. | Corps and Commands.                         | Average Annual Strength.               | Admitted into Hospital. | Deaths.         |              |        | Invalids sent Home. | Average Num-ber Constantly Sick. | Ratio per 1,000 of Strength. |       |            |                  | Average Sick Time to each Soldier. | Average Dur-ation of Sickness. | Stations occupied during the Year.                  | Com-pleted Years of Service in Foreign Com-mands. |
|-----------------------|---------------------------------------------|----------------------------------------|-------------------------|-----------------|--------------|--------|---------------------|----------------------------------|------------------------------|-------|------------|------------------|------------------------------------|--------------------------------|-----------------------------------------------------|---------------------------------------------------|
|                       |                                             |                                        |                         | In the Command. | Of Invalids. | Total. |                     |                                  | Admitted.                    | Died. | Invalided. | Constantly Sick. |                                    |                                |                                                     |                                                   |
|                       |                                             |                                        |                         |                 |              |        |                     |                                  |                              |       |            |                  |                                    |                                |                                                     |                                                   |
| Det.                  | GIBRALTAR—cont.                             |                                        |                         |                 |              |        |                     |                                  |                              |       |            |                  |                                    |                                |                                                     |                                                   |
|                       | Medical Staff Corps                         | 75                                     | 48                      | —               | —            | —      | 3                   | 2'26                             | 640'0                        | —     | 40'00      | 39'46            | 14'44                              | 22'57                          | Gibraltar                                           | Various                                           |
|                       | Garrison Staff and Depart-ments.            | 33                                     | 6                       | —               | 1            | 1      | 1                   | '64                              | 181'8                        | 30'30 | 30'30      | 19'39            | 7'10                               | 39'04                          | Gibraltar                                           | "                                                 |
|                       | Other Corps                                 | 6                                      | 3                       | —               | —            | —      | —                   | '16                              | 500'0                        | —     | —          | 26'66            | 9'76                               | 19'52                          | Gibraltar                                           | "                                                 |
| 8th                   | MALTA.                                      |                                        |                         |                 |              |        |                     |                                  |                              |       |            |                  |                                    |                                |                                                     |                                                   |
|                       | Dragoon Guards                              | —                                      | —                       | —               | —            | —      | —                   | '13                              | —                            | 7'87  | 55'11      | 56'85            | 20'80                              | 26'96                          | Cottonera, 12 months                                | 2                                                 |
|                       | 2/1 Royal Artillery, Northern Di- vision.   | 127                                    | 98                      | 1               | —            | 1      | 7                   | 7'22                             | 771'6                        | 7'81  | 15'62      | 27'81            | 10'18                              | 19'16                          | Valetta, 12 months                                  | 3                                                 |
|                       | 6/1 Royal Artillery, Cinque Ports Division. | 128                                    | 68                      | 1               | —            | 1      | 2                   | 3'56                             | 531'2                        | 7'09  | 7'09       | 23'47            | 8'59                               | 22'43                          | Cottonera, 12 months                                | 2                                                 |
|                       | 1/1 Royal Artillery, Southern Division.     | 141                                    | 54                      | 1               | —            | 1      | 1                   | 3'31                             | 382'9                        | —     | —          | 45'41            | 16'61                              | 13'24                          | Valetta, 11 months. From England 26th January 1883. | —                                                 |
|                       | 4/1 Royal Artillery, Southern Division.     | 135                                    | 123                     | —               | —            | —      | —                   | 6'13                             | 911'1                        | —     | —          | 43'01            | 15'74                              | 27'17                          | Cottonera, 12 months                                | 2                                                 |
|                       | 4/1 Royal Artillery, Western Di- vision.    | 126                                    | 73                      | —               | —            | —      | —                   | 5'42                             | 579'3                        | —     | —          | 23'80            | 67'85                              | 24'75                          | Valetta, 11 months. From England 26th January 1883. | —                                                 |
|                       | 4/1 Royal Artillery, Scottish Di- vision.   | 136                                    | 172                     | —               | —            | —      | 3                   | 8'55                             | 1365'0                       | —     | —          | 7'04             | 39'15                              | 14'33                          | Valetta, 12 months                                  | 3                                                 |
|                       | 1/1 Royal Artillery, North Irish Division.  | 142                                    | 83                      | 3               | —            | 3      | 1                   | 5'56                             | 594'5                        | 21'12 | 12'85      | 42'13            | 15'42                              | 12'85                          | Valetta, 11 months. From England 26th January 1883. | —                                                 |
|                       | 3/1 Royal Artillery, North Irish Division.  | 145                                    | 174                     | 1               | —            | 1      | —                   | 6'11                             | 1200'0                       | 6'89  | —          | 104'44           | 38'32                              | 24'57                          | Valetta, 14 months. To England 9th February 1883.   | 6                                                 |
|                       | 7/1 Royal Artillery, South Irish Division.  | 9                                      | 14                      | —               | —            | —      | —                   | '94                              | 1553'5                       | —     | —          | 30'00            | 10'98                              | 18'30                          | Valetta, 14 months. To England 9th February 1883.   | 6                                                 |
|                       | 8/1 Royal Artillery, South Irish Division.  | 10                                     | 6                       | —               | —            | —      | —                   | '30                              | 600'0                        | —     | —          | 16'00            | 5'85                               | 6'50                           | Valetta, 14 months. To England 9th February 1883.   | 6                                                 |
|                       | 9/1                                         | Royal Artillery, South Irish Division. | 10                      | 9               | 1            | —      | 1                   | —                                | '16                          | 900'0 | 100'00     | —                | —                                  | —                              | —                                                   | —                                                 |

| Brigade or Bat- | Corps and Commands.                | Average Annual Strength. | Admitted into Hospital. | In the Command. | Deaths.      |        | Invalids sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |        |            |                  | Average Sick Time to each Soldier. | Average Duration of each Case. | Stations occupied during the Year.                                                    | Completed Years of Service in Foreign Commands. |
|-----------------|------------------------------------|--------------------------|-------------------------|-----------------|--------------|--------|---------------------|---------------------------------|------------------------------|--------|------------|------------------|------------------------------------|--------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------|
|                 |                                    |                          |                         |                 | Of Invalids. | Total. |                     |                                 | Admitted.                    | Died.  | Invalided. | Constantly Sick. |                                    |                                |                                                                                       |                                                 |
|                 | <b>MALTA—cont.</b>                 |                          |                         |                 |              |        |                     |                                 |                              |        |            |                  |                                    |                                |                                                                                       |                                                 |
|                 | Royal Artillery. Other details.    | 7                        | 2                       | —               | —            | —      | 1                   | .71                             | 225.6                        | —      | 142.86     | 101.43           | 37.12                              | 129.83                         | Various stations                                                                      | Various                                         |
|                 | Royal Engineers                    | 138                      | 74                      | 3               | —            | 3      | 1                   | 3.48                            | 536.2                        | 21.74  | 7.21       | 25.22            | 9.22                               | 17.21                          | "                                                                                     | "                                               |
| 1st             | Duke of Cornwall's Light Infantry. | 74                       | 78                      | 1               | 1            | 2      | 3                   | 5.39                            | 1054.0                       | 27.02  | 40.54      | 72.83            | 26.65                              | 25.29                          | Valetta, 14 months. To India, 17th February 1888.                                     | 3                                               |
| 2nd             | Border Regiment                    | 89                       | 110                     | —               | —            | —      | —                   | 6.55                            | 1235.9                       | —      | —          | 73.59            | 26.03                              | 21.79                          | Cotonera, 14 months. From England, 12th November 1888.                                | —                                               |
| 1st             | Dorsetshire Regiment               | 726                      | 370                     | 4               | —            | 4      | 5                   | 20.49                           | 509.6                        | 5.51   | 6.83       | 28.22            | 10.32                              | 20.26                          | Cotonera and Forrest, 104 months. Detachment, Gozo. From England, 17th February 1888. | —                                               |
| 1st             | Royal Highlanders                  | 821                      | 455                     | 4               | —            | 4      | 15                  | 30.45                           | 554.2                        | 4.87   | 18.27      | 37.08            | 13.57                              | 24.49                          | Valetta, 12 months. Detachment, Forrest.                                              | 3                                               |
| 2nd             | Essex Regiment                     | 924                      | 466                     | 3               | —            | 3      | 9                   | 24.94                           | 504.3                        | 3.23   | 9.74       | 26.99            | 9.87                               | 19.58                          | Valetta and Cotonera, 12 months. Detachments, Forrest and Citta Vecchia.              | 1                                               |
| 1st             | Royal Berkshire Regiment           | 790                      | 355                     | 4               | —            | 4      | 4                   | 23.19                           | 449.3                        | 5.06   | 5.08       | 29.35            | 10.74                              | 23.90                          | Cotonera and Forrest, 12 months. Half battalion from Cyprus, 9th February 1888.       | 3                                               |
| 1st             | Shropshire Light Infantry          | 797                      | 316                     | 5               | 1            | 6      | 11                  | 24.25                           | 398.5                        | 7.53   | 13.80      | 30.42            | 11.13                              | 23.08                          | Cotonera, 12 months. Detachment, Forrest.                                             | 1                                               |
| 1st             | Gordon Highlanders                 | 727                      | 311                     | 2               | —            | 2      | 7                   | 16.20                           | 427.7                        | 2.75   | 9.62       | 22.28            | 8.15                               | 19.06                          | Forrest, 104 months. Detachment, Gozo. To Ceylon, 14th November 1888.                 | 3                                               |
|                 | Infantry. Other details            | 30                       | 11                      | 3               | —            | 3      | 2                   | 4.90                            | 366.6                        | 100.00 | 66.66      | 163.33           | 50.78                              | 163.03                         | Various stations                                                                      | Various                                         |
| Det.            | Army Services Corps                | 11                       | 4                       | 1               | —            | 1      | —                   | .34                             | 363.6                        | 90.90  | —          | 30.91            | 10.40                              | 31.11                          | "                                                                                     | "                                               |
| "               | Ordnance Store Corps               | 12                       | 2                       | —               | —            | —      | —                   | .23                             | 166.6                        | —      | —          | 18.33            | 6.71                               | 40.26                          | "                                                                                     | "                                               |
| "               | Medical Staff Corps                | 100                      | 45                      | —               | —            | —      | 5                   | 3.46                            | 450.0                        | —      | 50.00      | 24.60            | 8.97                               | 20.00                          | "                                                                                     | "                                               |
| "               | Garrison Staff and Departments.    | 8                        | 4                       | —               | —            | —      | —                   | .23                             | 500.0                        | —      | —          | 27.50            | 10.06                              | 20.13                          | "                                                                                     | "                                               |



| Brigade or Bat-<br>talion. | Corps and Commands.                                                                   | Average Annual<br>Strength. | Admitted into<br>Hospital. | Deaths.            |                 |        | Invalids sent<br>Home. | Average Num-<br>ber Constantly<br>Sick. | Ratio per 1,000 of Strength |       |            | Average Sick<br>Time to each<br>Soldier. | Average Dura-<br>tion of Sickness. | Stations occupied during the Year. | Com-<br>pleted<br>Years of<br>Service<br>in<br>Foreign<br>Com-<br>mands.                 |                     |
|----------------------------|---------------------------------------------------------------------------------------|-----------------------------|----------------------------|--------------------|-----------------|--------|------------------------|-----------------------------------------|-----------------------------|-------|------------|------------------------------------------|------------------------------------|------------------------------------|------------------------------------------------------------------------------------------|---------------------|
|                            |                                                                                       |                             |                            | In the<br>Command. | Of<br>Invalids. | Total. |                        |                                         | Admitted.                   | Died. | Invalided. |                                          |                                    |                                    |                                                                                          | Constantly<br>Sick. |
| CYPRUS.                    |                                                                                       |                             |                            |                    |                 |        |                        |                                         |                             |       |            |                                          |                                    |                                    |                                                                                          |                     |
| 1st                        | Yorkshire Regiment . .                                                                | 774                         | 776                        | 3                  | —               | 3      | 3                      | 44.49                                   | 1002.6                      | 3.87  | 3.87       | 57.48                                    | 21.03                              | 20.98                              | days. Polymedia, 7 months; Mount<br>Troodos, 4 months. From Egypt,<br>3rd February 1888. | —                   |
| 1st                        | Royal Berkshire Regiment<br>(Half Battalion).<br>Garrison Staff and Depart-<br>ments. | 39                          | 23                         | —                  | —               | —      | —                      | 1.19                                    | 564.1                       | —     | —          | 30.51                                    | 11.16                              | 19.80                              | Polymedia, 1 month. To Malta, 3rd<br>February 1888.                                      | 1                   |
|                            |                                                                                       | 48                          | 23                         | —                  | —               | —      | 1                      | 1.11                                    | 688.7                       | —     | 23.81      | 26.43                                    | 9.67                               | 14.51                              | Various stations                                                                         | Various             |
| CANADA.                    |                                                                                       |                             |                            |                    |                 |        |                        |                                         |                             |       |            |                                          |                                    |                                    |                                                                                          |                     |
| 3/1                        | Royal Artillery, Cinque Ports<br>Division.                                            | 111                         | 68                         | 2                  | —               | 2      | 3                      | 4.43                                    | 612.6                       | 18.02 | 27.02      | 39.91                                    | 14.50                              | 23.84                              | Halifax, 12 months                                                                       | 1                   |
| 4/1                        | Royal Artillery, Cinque Ports<br>Division.                                            | 119                         | 78                         | 1                  | —               | 1      | 2                      | 3.91                                    | 635.5                       | 8.40  | 16.80      | 32.85                                    | 12.03                              | 18.35                              | Halifax, 12 months                                                                       | 1                   |
| 3/1                        | Royal Artillery, London Divi-<br>sion.                                                | 106                         | 38                         | 1                  | —               | 1      | 1                      | 2.27                                    | 338.6                       | 9.43  | 9.43       | 21.41                                    | 7.94                               | 21.86                              | Halifax, 12 months                                                                       | 1                   |
|                            | Royal Engineers . .                                                                   | 130                         | 53                         | —                  | —               | —      | 2                      | 2.63                                    | 400.0                       | —     | 15.38      | 20.15                                    | 7.38                               | 18.44                              | Halifax . .                                                                              | Various             |
| 2nd                        | West Riding Regiment . .                                                              | 203                         | 145                        | 1                  | —               | 1      | —                      | 8.48                                    | 714.3                       | 4.92  | —          | 41.77                                    | 15.29                              | 21.40                              | Halifax, 3 months. From Bermuda,<br>25th September 1888.                                 | —                   |
| 2nd                        | York and Lancaster Regiment                                                           | 616                         | 298                        | 2                  | 1               | 3      | 23                     | 23.14                                   | 433.8                       | 4.86  | 45.45      | 37.56                                    | 13.75                              | 23.42                              | Halifax, 9 months. To West Indies,<br>30th September 1888.                               | 2                   |
|                            | Garrison Staff and Depart-<br>ments.                                                  | 44                          | 11                         | 2                  | 1               | 3      | 2                      | 1.30                                    | 250.0                       | 63.17 | 45.45      | 29.54                                    | 10.81                              | 43.25                              | Halifax . .                                                                              | Various             |
| BERMUDA.                   |                                                                                       |                             |                            |                    |                 |        |                        |                                         |                             |       |            |                                          |                                    |                                    |                                                                                          |                     |
| 2/1                        | Royal Artillery, North Irish<br>Division.                                             | 141                         | 83                         | 2                  | —               | 2      | 2                      | 5.29                                    | 624.1                       | 14.18 | 14.18      | 37.52                                    | 13.73                              | 23.00                              | St. George's, 12 months. Detach-<br>ment, Walford.                                       | 2                   |
| 3/1                        | Royal Artillery, Southern<br>Division.                                                | 133                         | 86                         | 1                  | —               | 1      | 2                      | 5.43                                    | 646.6                       | 7.52  | 22.66      | 40.83                                    | 14.94                              | 23.11                              | St. George's, 12 months. Detach-<br>ment, Prospect.                                      | 2                   |

| Brigade or Bat-<br>talion. | Corps and Commanda.                    | Average Annual<br>Strength. | Admitted into<br>Hospital. | Deaths.            |                 |        | Invalids sent<br>Home. | Average Num-<br>ber Constantly<br>Sick. | Ratio per 1,000 of Strength. |        |            |                     | Average Sick<br>Time to each<br>Soldier. | Average Dura-<br>tion of each Case | Stations occupied during the Year.                                                                               | Com-<br>pleted<br>Years of<br>Service<br>in<br>Foreign<br>Com-<br>manda. |
|----------------------------|----------------------------------------|-----------------------------|----------------------------|--------------------|-----------------|--------|------------------------|-----------------------------------------|------------------------------|--------|------------|---------------------|------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|                            |                                        |                             |                            | In the<br>Command. | Of<br>Invalids. | Total. |                        |                                         | Admitted.                    | Died.  | Invalided. | Constantly<br>Sick. |                                          |                                    |                                                                                                                  |                                                                          |
| BERMUDA—contd.             |                                        |                             |                            |                    |                 |        |                        |                                         |                              |        |            |                     |                                          |                                    |                                                                                                                  |                                                                          |
| 1st<br>Co.                 | Royal Engineers                        | 80                          | 28                         | —                  | —               | —      | —                      | 1.39                                    | 350.0                        | —      | —          | 17.37               | 6.36                                     | 18.17                              | Various stations                                                                                                 | Various                                                                  |
| 27th<br>Co.                | Royal Engineers                        | 48                          | 19                         | —                  | —               | —      | —                      | .61                                     | 388.8                        | —      | —          | 13.29               | 4.88                                     | 12.33                              | St. George's                                                                                                     | "                                                                        |
| 1st                        | Leicestershire Regiment                | 215                         | 261                        | 17                 | —               | 17     | —                      | 14.15                                   | 1213.9                       | 79.07  | —          | 63.81               | 24.00                                    | 19.84                              | Prospect, 3 months. Detachments,<br>St. George's and Watford. From<br>England, 20th September.                   | —                                                                        |
| 2nd                        | West Riding Regiment                   | 644                         | 411                        | —                  | —               | —      | 6                      | 17.92                                   | 638.2                        | —      | 9.32       | 27.63               | 10.18                                    | 15.96                              | Prospect, 9 months. Detachments,<br>St. George's and Watford. To<br>Halifax, 21st September.                     | 3                                                                        |
| Det.                       | Army Services Corps                    | 33                          | 16                         | 1                  | —               | 1      | —                      | .85                                     | 484.8                        | 30.30  | —          | 25.76               | 9.43                                     | 19.44                              | Various stations                                                                                                 | Various                                                                  |
| Det.                       | Ordnance Store Corps                   | 30                          | 8                          | 1                  | —               | 1      | —                      | .27                                     | 266.6                        | 33.33  | —          | 9.00                | 8.29                                     | 12.35                              | "                                                                                                                | "                                                                        |
| Det.                       | Medical Staff Corps                    | 18                          | 11                         | 2                  | —               | 2      | 1                      | .63                                     | 611.1                        | 111.11 | 53.55      | 35.00               | 12.81                                    | 20.96                              | "                                                                                                                | "                                                                        |
|                            | Garrison Staff and Depart-<br>ments.   | 4                           | —                          | —                  | —               | —      | —                      | —                                       | —                            | —      | —          | —                   | —                                        | —                                  | —                                                                                                                | —                                                                        |
| WEST INDIES.               |                                        |                             |                            |                    |                 |        |                        |                                         |                              |        |            |                     |                                          |                                    |                                                                                                                  |                                                                          |
|                            | Royal Artillery, Coast Brigade         | 2                           | —                          | —                  | —               | —      | —                      | —                                       | —                            | —      | —          | —                   | —                                        | —                                  | Newcastle, 12 months                                                                                             | Various                                                                  |
| Q/1                        | Royal Artillery, London Divi-<br>sion. | 104                         | 168                        | 1                  | —               | 1      | 1                      | 9.05                                    | 1615.2                       | 9.61   | 9.61       | 87.01               | 31.64                                    | 19.71                              | Barbados, 12 months                                                                                              | 3                                                                        |
| 3/1                        | Royal Artillery, Welsh Divi-<br>sion.  | 90                          | 126                        | 1                  | —               | 1      | 1                      | 4.65                                    | 1272.7                       | 10.10  | 10.10      | 46.97               | 17.18                                    | 13.51                              | Newcastle, 12 months. Detachment,<br>Port Royal.                                                                 | 3                                                                        |
|                            | Royal Engineers                        | 26                          | 19                         | —                  | —               | —      | —                      | .76                                     | 730.8                        | —      | —          | 29.23               | 10.69                                    | 14.63                              | Various stations                                                                                                 | Various                                                                  |
| 1st                        | East Yorkshire Regiment                | 716                         | 760                        | —                  | —               | —      | 12                     | 41.33                                   | 1061.4                       | —      | 16.76      | 53.07               | 21.23                                    | 20.02                              | Barbados, 10 months. Detachments,<br>Newcastle, Trinidad, and Up Park<br>Camp. To South Africa, 23rd<br>October. | 3                                                                        |

| Brigade or Battalion.        | Corps and Commands.                    | Average Annual Strength. | Admitted into Hospital. | Deaths.         |              |        | Invalids sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |       |            |                  | Average Sick Time to each Soldier. | Average Duration of Sickness. | Stations occupied during the Year.                                                                   | Completed Years of Service in Foreign Commands. |
|------------------------------|----------------------------------------|--------------------------|-------------------------|-----------------|--------------|--------|---------------------|---------------------------------|------------------------------|-------|------------|------------------|------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------|
|                              |                                        |                          |                         | In the Command. | Of Invalids. | Total. |                     |                                 | Admitted.                    | Died. | Invalided. | Constantly Sick. |                                    |                               |                                                                                                      |                                                 |
| WEST INDIES—cont.            |                                        |                          |                         |                 |              |        |                     |                                 |                              |       |            |                  |                                    |                               |                                                                                                      |                                                 |
| 2nd                          | York and Lancaster Regiment            | 163                      | 178                     | 1               | —            | 1      | —                   | 7.74                            | 1098.0                       | 6.13  | —          | 47.43            | 17.37                              | 15.92                         | Barbados, 24 months. Detachments, Trinidad, Newcastle, and Up Park Camp. From Halifax, 13th October. | —                                               |
| Div. 1st & 2nd               | West India Regiment                    | 17                       | 13                      | 1               | —            | 1      | —                   | .31                             | 705.9                        | 53.82 | —          | 18.23            | 6.67                               | 9.45                          | Various stations                                                                                     | Various                                         |
| 2nd                          | West India Regiment                    | 1                        | —                       | —               | —            | —      | —                   | —                               | —                            | —     | —          | —                | —                                  | —                             | Jamaica, 3 months. Formed, 1st October 1888.                                                         | "                                               |
|                              | Garrison Staff and Departments.        | 36                       | 16                      | —               | —            | —      | —                   | .68                             | 444.4                        | —     | —          | 16.11            | 5.89                               | 13.26                         | Various stations                                                                                     | "                                               |
| SOUTH AFRICA AND ST. HELENA. |                                        |                          |                         |                 |              |        |                     |                                 |                              |       |            |                  |                                    |                               |                                                                                                      |                                                 |
| 6th                          | Dragoons                               | 426                      | 305                     | 9               | —            | 9      | 9                   | 13.05                           | 716.0                        | 21.13 | 21.13      | 42.37            | 15.51                              | 31.63                         | Pietermaritzburg, 12 months. Detachment, Etshowe.                                                    | 7                                               |
| H/4                          | Royal Artillery                        | 160                      | 142                     | 1               | —            | 1      | 14                  | 11.46                           | 887.5                        | 6.25  | 87.50      | 71.63            | 23.21                              | 29.54                         | Pietermaritzburg, 7 months. Etshowe, 5 months.                                                       | 4                                               |
| 1/1                          | Royal Artillery, Lancashire Division.  | 104                      | 121                     | 1               | —            | 1      | 4                   | 5.86                            | 1163.5                       | 9.63  | 38.46      | 56.35            | 30.62                              | 17.73                         | Cape Town, 10 months. Detachment, Simon's Town. From Hong Kong, 8th February.                        | —                                               |
| 8/1                          | Royal Artillery, Western Division.     | 106                      | 133                     | 1               | 3            | 3      | 6                   | 9.43                            | 1254.7                       | 23.30 | 56.60      | 88.96            | 33.56                              | 25.95                         | Cape Town, 12 months. Detachment, Simon's Town.                                                      | 5                                               |
| 1/1                          | Royal Artillery, South Irish Division. | 112                      | 81                      | 2               | —            | 2      | 3                   | 5.09                            | 723.2                        | 17.86 | 28.78      | 45.44            | 16.63                              | 23.00                         | St. Helena, 12 months                                                                                | 4                                               |
|                              | Royal Engineers                        | 97                       | 50                      | —               | —            | —      | —                   | 2.93                            | 515.5                        | —     | —          | 30.10            | 11.02                              | 21.37                         | Various stations                                                                                     | Various                                         |
| 1st                          | Royal Scots                            | 313                      | 653                     | 3               | 1            | 4      | 30                  | 42.71                           | 905.2                        | 4.93  | 36.90      | 53.63            | 19.23                              | 33.94                         | Wynberg, 7 months. Etshowe, 5 months. Detachments, St. Helena, Cape Town, and Simon's Town.          | 4                                               |
| 1st                          | East Yorkshire Regiment                | 95                       | 119                     | —               | —            | —      | —                   | 5.24                            | 1176.9                       | —     | —          | 55.16            | 20.19                              | 17.12                         | Cape Town, 24 months. Detachment, St. Helena. From West Indies, 19th November.                       | —                                               |

| Battalion or Brigade or Dep't.    | Corps and Commands.                 | Average Annual Strength. | Admitted into Hospital. | Deaths.         |              |        | Invalids sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |       |           |                  | Average Sick Time to each Soldier. | Average Duration of Sickness. | Stations occupied during the Year.                                                                                        | Completed years of Service in Foreign Commands. |
|-----------------------------------|-------------------------------------|--------------------------|-------------------------|-----------------|--------------|--------|---------------------|---------------------------------|------------------------------|-------|-----------|------------------|------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
|                                   |                                     |                          |                         | In the Command. | Of Invalids. | Total. |                     |                                 | Admitted.                    | Died. | Invalids. | Constantly Sick. |                                    |                               |                                                                                                                           |                                                 |
| SOUTH AFRICA AND ST. HELENA—cont. |                                     |                          |                         |                 |              |        |                     |                                 |                              |       |           |                  |                                    |                               |                                                                                                                           |                                                 |
| 1st                               | Royal Inniskilling Fusiliers -      | 513                      | 877                     | —               | —            | —      | 26                  | 63.80                           | 1683.1                       | —     | 50.19     | 123.17           | 45.03                              | 26.63                         | Cape Town, 11 months. Detachments, Eshowe and Wynberg. To England, 25th November. Pietermaritzburg and Eshowe, 12 months. | 4                                               |
| 1st                               | North Staffordshire Regiment        | 884                      | 599                     | 5               | —            | 5      | 36                  | 43.01                           | 677.6                        | 5.65  | 40.72     | 49.65            | 17.81                              | 26.27                         | Wynberg, 4 months. Detachment, Simon's Town. From Egypt, 28th August.                                                     | 1                                               |
| 3rd                               | Rifle Brigade -                     | 265                      | 166                     | 1               | —            | 1      | 2                   | 7.77                            | 626.4                        | 3.77  | 7.55      | 29.32            | 10.73                              | 17.13                         | Various stations                                                                                                          | —                                               |
| Dt.                               | Army Service Corps -                | 24                       | 8                       | —               | 1            | 1      | 1                   | .33                             | 333.3                        | 41.67 | 41.67     | 13.75            | 5.03                               | 15.09                         | Various stations                                                                                                          | Various                                         |
| Dt.                               | Medical Staff Corps -               | 60                       | 15                      | —               | —            | —      | 2                   | 1.36                            | 250.0                        | —     | 33.33     | 22.67            | 8.29                               | 33.18                         | "                                                                                                                         | "                                               |
| Dt.                               | Ordnance Store Corps -              | 36                       | 13                      | 2               | —            | 2      | 1                   | .41                             | 361.1                        | 55.55 | 27.78     | 11.39            | 4.16                               | 11.54                         | "                                                                                                                         | "                                               |
|                                   | Garrison Staff and Departments.     | 17                       | 2                       | —               | —            | —      | —                   | .14                             | 117.6                        | —     | —         | .83              | 3.01                               | 25.63                         | "                                                                                                                         | "                                               |
| MAURITIUS.                        |                                     |                          |                         |                 |              |        |                     |                                 |                              |       |           |                  |                                    |                               |                                                                                                                           |                                                 |
| 2/1                               | Royal Artillery, Southern Division. | 104                      | 158                     | 2               | —            | 2      | 10                  | 7.25                            | 1519.2                       | 19.23 | 96.15     | 69.71            | 25.51                              | 16.79                         | Port Louis, 11 months. Detachment, Curepipe. From Singapore, 24th January.                                                | —                                               |
|                                   | Royal Engineers -                   | 18                       | 14                      | 1               | —            | 1      | 2                   | 1.08                            | 777.8                        | 53.55 | 111.11    | 60.00            | 31.96                              | 28.23                         | Various stations                                                                                                          | Various                                         |
| Dt.                               | Royal Inniskilling Fusiliers -      | 245                      | 205                     | 1               | —            | 1      | 10                  | 12.36                           | 836.7                        | 4.08  | 40.81     | 50.45            | 18.46                              | 22.06                         | Curepipe, 11½ months. Detachment, Port Louis. To Natal, 14th December.                                                    | 3                                               |
| 1st                               | North Staffordshire Regiment        | 21                       | 18                      | —               | —            | —      | —                   | .24                             | 837.1                        | —     | —         | 11.43            | 4.18                               | 4.88                          | Curepipe, ½ month. Detachment, Port Louis. From Natal, 14th December.                                                     | —                                               |
|                                   | Garrison Staff and Departments.     | 17                       | 5                       | 1               | —            | 1      | 1                   | .40                             | 224.1                        | 53.62 | 53.62     | 23.63            | 8.61                               | 29.28                         | Various stations                                                                                                          | Various                                         |

| Brigade or Battalion.          | Corps and Commands.                 | Average Annual Strength. | Admitted into Hospital. | Deaths.         |              |        | Invalids sent Home. | Average Num-ber Constantly Sick. | Ratio per 1,000 of Strength. |       |            |                  | Average Sick Time to each Soldier. | Average Dur-ation of each Case. | Stations occupied during the Year.                                                                    | Com-pleted Years of Service in Foreign Com-mands |  |
|--------------------------------|-------------------------------------|--------------------------|-------------------------|-----------------|--------------|--------|---------------------|----------------------------------|------------------------------|-------|------------|------------------|------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------|--|
|                                |                                     |                          |                         | In the Command. | Of Invalids. | Total. |                     |                                  | Admitted.                    | Died. | Invalided. | Constantly Sick. |                                    |                                 |                                                                                                       |                                                  |  |
|                                |                                     |                          |                         |                 |              |        |                     |                                  |                              |       |            |                  |                                    |                                 |                                                                                                       |                                                  |  |
| CEYLON.                        |                                     |                          |                         |                 |              |        |                     |                                  |                              |       |            |                  |                                    |                                 |                                                                                                       |                                                  |  |
| 8/1                            | Royal Artillery, Southern Division. | 106                      | 84                      | 3               | —            | 3      | 5                   | 6.72                             | 792.5                        | 23.11 | 47.17      | 63.40            | 23.20                              | 23.28                           | Colombo, 12 months                                                                                    | 2                                                |  |
| 9/1                            | Royal Artillery, Southern Division. | 108                      | 112                     | 3               | —            | 3      | 3                   | 6.50                             | 1057.0                       | 27.78 | 27.78      | 60.19            | 22.02                              | 21.24                           | Trincomalee, 12 months                                                                                | 2                                                |  |
|                                | Royal Engineers                     | 21                       | 20                      | —               | —            | —      | 1                   | .93                              | 962.4                        | —     | 47.62      | 44.30            | 10.21                              | 17.02                           | Various stations                                                                                      | Various                                          |  |
| 1st                            | Gordon Highlanders                  | 63                       | 42                      | 1               | —            | 1      | —                   | 1.65                             | 666.7                        | 15.87 | —          | 24.60            | 9.00                               | 13.51                           | Colombo, 1 month. Detachments, Kandy and Trincomalee. From Malta, 6th December.                       | —                                                |  |
| 1st                            | Argyll and Sutherland High-landers. | 811                      | 1,001                   | 10              | —            | 10     | 10                  | 26.84                            | 1234.3                       | 13.33 | 12.33      | 70.09            | 23.65                              | 20.78                           | Colombo, 11 months. Detachments, Point de Galle, Kandy, and Trincomalee. To Hong Kong, 6th De-cember. | 2                                                |  |
|                                | Garrison Staff and Depart-ments.    | 24                       | 6                       | 1               | —            | 1      | —                   | .18                              | 250.0                        | 41.67 | —          | 7.50             | 2.74                               | 10.98                           | Various stations                                                                                      | Various                                          |  |
| CHINA AND STRAITS SETTLEMENTS. |                                     |                          |                         |                 |              |        |                     |                                  |                              |       |            |                  |                                    |                                 |                                                                                                       |                                                  |  |
| 2/1                            | Royal Artillery, Southern Division. | 2                        | —                       | —               | 1            | 1      | 1                   | .04                              | —                            | —     | —          | —                | —                                  | —                               | Fort Canning, 10 days. To Mauritius, 10th January.                                                    | 2                                                |  |
| 5/1                            | Royal Artillery, Eastern Division.  | 90                       | 95                      | 2               | —            | 2      | 4                   | 4.89                             | 1059.6                       | 20.20 | 40.40      | 40.40            | 18.08                              | 18.83                           | Hong Kong, 12 months                                                                                  | 2                                                |  |
| 6/1                            | Royal Artillery, Eastern Division.  | 112                      | 155                     | 1               | —            | 1      | 2                   | 7.14                             | 1333.9                       | 8.93  | 17.86      | 63.75            | 23.33                              | 16.86                           | Fort Canning, 12 months                                                                               | 2                                                |  |
| 7/1                            | Royal Artillery, Western Division.  | 106                      | 128                     | 2               | —            | 2      | —                   | 5.54                             | 1207.5                       | 13.87 | —          | 52.23            | 19.13                              | 15.84                           | Hong Kong, 12 months                                                                                  | 1                                                |  |
| 9/1                            | Royal Artillery, Western Division.  | 105                      | 135                     | 1               | —            | 1      | 1                   | 8.71                             | 1190.5                       | 9.52  | 9.52       | 82.95            | 30.36                              | 25.50                           | Fort Canning, 12 months                                                                               | 1                                                |  |
|                                | Royal Engineers                     | 137                      | 89                      | 2               | —            | 2      | —                   | 3.79                             | 649.6                        | 14.60 | —          | 27.66            | 10.12                              | 15.53                           | Various stations                                                                                      | Various                                          |  |

| Brigade or Battalion.               | Corps and Commands.                    | Average Annual Strength. | Admitted into Hospital. | Deaths.         |              |        | Invalids sent Home. | Average Num. Sick. per Constantly Sick. | Ratio per 1,000 of Strength. |       |            |                  | Average Sick Time to each Soldier. | Average Duration of Sickness. | Stations occupied during the Year.                                                 | Completed Years of Service in Foreign Commands. |
|-------------------------------------|----------------------------------------|--------------------------|-------------------------|-----------------|--------------|--------|---------------------|-----------------------------------------|------------------------------|-------|------------|------------------|------------------------------------|-------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------|
|                                     |                                        |                          |                         | In the Command. | Of Invalids. | Total. |                     |                                         | Admitted.                    | Died. | Invalided. | Constantly Sick. |                                    |                               |                                                                                    |                                                 |
| CHINA AND STRAITS SETTLEMENTS—cont. |                                        |                          |                         |                 |              |        |                     |                                         |                              |       |            |                  |                                    |                               |                                                                                    |                                                 |
| 2nd                                 | South Lancashire Regiment              | 838                      | 1,008                   | 7               | —            | 7      | 4                   | 04.93                                   | 1217.4                       | 8.46  | 4.83       | 78.42            | 23.70                              | 23.58                         | Tangin, 13 months. Detachment, Penang.                                             | 1                                               |
|                                     | Northamptonshire Regiment              | 867                      | 1,000                   | 10              | 1            | 11     | 26                  | 53.03                                   | 1153.4                       | 12.03 | 20.96      | 61.22            | 22.41                              | 19.42                         | Hong Kong, 12 months                                                               | 3                                               |
| 1st                                 | Argyll and Sutherland Highlanders.     | 31                       | 19                      | —               | —            | —      | —                   | 1.35                                    | 904.8                        | —     | —          | 64.23            | 23.53                              | 20.00                         | Hong Kong, 10 days. From Ceylon, 22nd December.                                    | —                                               |
|                                     | Garrison Staff and Departments.        | 53                       | 31                      | —               | —            | —      | 3                   | .95                                     | 403.8                        | —     | 38.46      | 18.26            | 6.09                               | 16.56                         | Various stations                                                                   | Various                                         |
| EGYPT.                              |                                        |                          |                         |                 |              |        |                     |                                         |                              |       |            |                  |                                    |                               |                                                                                    |                                                 |
| 20th                                | Hussars                                | 125                      | 93                      | 3               | —            | 3      | 1                   | 7.13                                    | 744.0                        | 24.00 | 8.00       | 57.44            | 21.02                              | 23.26                         | Abbassieh, 11½ months. Suakin, ½ month.                                            | 3                                               |
| 3/1                                 | Royal Artillery, Northern Division.    | 130                      | 106                     | 3               | —            | 3      | 3                   | 5.85                                    | 815.4                        | 23.08 | 23.08      | 45.00            | 16.47                              | 20.20                         | Cairo, 13 months. Detachment, Alexandria.                                          | 3                                               |
| 2/1                                 | Royal Artillery, South Irish Division. | —                        | —                       | —               | —            | —      | —                   | .04                                     | —                            | —     | —          | —                | —                                  | —                             | Various stations                                                                   | Various                                         |
|                                     | Royal Engineers                        | 106                      | 63                      | —               | —            | —      | 3                   | 4.04                                    | 594.3                        | —     | 23.30      | 38.11            | 13.95                              | 23.47                         | Various stations                                                                   | Various                                         |
| 1st                                 | Royal Fusiliers                        | 28                       | 10                      | —               | —            | —      | 4                   | 3.53                                    | 337.1                        | —     | 142.86     | 90.00            | 32.94                              | 92.23                         | Cairo, ½ month. To India, 8th January.                                             | 3                                               |
| 1st                                 | Yorkshire Regiment                     | 83                       | 71                      | —               | —            | —      | 4                   | 8.50                                    | 865.8                        | —     | 48.78      | 103.66           | 37.94                              | 43.82                         | Alexandria, 1 month. To Cyprus, 1st February.                                      | 3                                               |
| 1st                                 | Cheshire Regiment                      | 7                        | 6                       | —               | —            | —      | 2                   | 1.44                                    | 837.1                        | —     | 235.71     | 203.71           | 75.29                              | 87.84                         | Cairo, 4 months. Suakin, 1 month. From England, 30th July.                         | —                                               |
| 2nd                                 | King's Own Scottish Borderers          | 290                      | 439                     | 10              | —            | 10     | 1                   | 24.50                                   | 1686.2                       | 34.43 | 3.45       | 85.52            | 31.30                              | 18.56                         | Cairo, 11 months. Half battalion Suakin, ½ month.                                  | 3                                               |
| 1st                                 | Welsh Regiment                         | 791                      | 863                     | 11              | 1            | 13     | 16                  | 53.72                                   | 1067.3                       | 15.18 | 20.23      | 67.91            | 24.86                              | 22.05                         | Cairo, ½ month. Half battalion Suakin, ½ month.                                    | —                                               |
| 2nd                                 | Royal Irish Rifles                     | 804                      | 935                     | 10              | —            | 10     | 18                  | 58.70                                   | 1163.9                       | 19.44 | 23.39      | 73.01            | 26.72                              | 22.98                         | Alexandria, 1½ months. Half battalion Cairo, ½ month. From Gibraltar, 2nd January. | —                                               |

| Brigade or Battalion. | Corps and Commands.             | Average Annual Strength. | Admitted into Hospital. | Deaths.         |              |        | Invalids sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |           |                  | Average Sick Time to each Soldier. | Average Duration of Sickness. | Stations occupied during the Year. | Completed Years of Service in Foreign Commands. |         |
|-----------------------|---------------------------------|--------------------------|-------------------------|-----------------|--------------|--------|---------------------|---------------------------------|------------------------------|-----------|------------------|------------------------------------|-------------------------------|------------------------------------|-------------------------------------------------|---------|
|                       |                                 |                          |                         | In the Command. | Of Invalids. | Total. |                     |                                 | Died.                        | Invalids. | Constantly Sick. |                                    |                               |                                    |                                                 |         |
|                       | Egypt—cont.                     |                          |                         |                 |              |        |                     |                                 |                              |           |                  |                                    |                               |                                    |                                                 |         |
| 3rd                   | Rifle Brigade                   | 473                      | 460                     | 7               | —            | 7      | 17                  | 29.48                           | 972.5                        | 14.80     | 35.94            | 62.33                              | days. 22.81                   | 23.45                              | Cairo, 7 months. To South Africa, 1st August.   | —       |
|                       | Mounted Infantry                | 117                      | 156                     | —               | —            | —      | —                   | 7.35                            | 1333.3                       | —         | —                | 62.82                              | 22.99                         | 17.24                              | Abbassiyeh, 11½ months. Suakin, 3 months.       | Various |
| Dt.                   | Army Service Corps              | 97                       | 37                      | —               | —            | —      | 3                   | 3.68                            | 331.4                        | —         | 30.93            | 36.91                              | 13.51                         | 35.41                              | Various stations                                | "       |
| Dt.                   | Medical Staff Corps             | 113                      | 64                      | 2               | —            | 2      | 2                   | 3.89                            | 566.4                        | 17.70     | 17.70            | 34.42                              | 12.60                         | 22.25                              | "                                               | "       |
| Dt.                   | Ordnance Store Corps            | 89                       | 32                      | 2               | —            | 2      | —                   | 2.27                            | 359.5                        | 22.47     | —                | 25.51                              | 9.33                          | 25.96                              | "                                               | "       |
| Dt.                   | Military Police                 | 81                       | 34                      | —               | —            | —      | 1                   | 2.54                            | 419.7                        | —         | 12.35            | 31.36                              | 11.48                         | 27.34                              | "                                               | "       |
|                       | Garrison Staff and Departments. | 13                       | 4                       | —               | —            | —      | —                   | .19                             | 307.7                        | —         | —                | 14.61                              | 5.35                          | 17.38                              | "                                               | "       |

ABSTRACT No. XL.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the ADMISSIONS, MORTALITY, and INVALIDING in each Corps serving in the BENGAL COMMAND during the Year 1888.

| Corps.                    | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year.                                                                            | Years of Service in India. |
|---------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|-------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------|
|                           |                          |                         |                        |            |                     | Admissions into Hos- pital.  | Deaths. | Invalids. | Average Daily Sick. |                               |                                            |                                                                                                               |                            |
| CAVALRY.                  |                          |                         |                        |            |                     |                              |         |           |                     |                               |                                            |                                                                                                               |                            |
| 1st Dragoon Guards        | 620                      | 1,167                   | 30                     | 9          | 46.84               | 1833.3                       | 46.39   | 14.53     | 75.55               | 27.65                         | 14.69                                      | Rawal Pindi and Cholera Camps, 12 months; Dett. Topa, 5½ months.                                              | 3 2½                       |
| 2nd "                     | 661                      | 690                     | 5                      | 10         | 38.83               | 1045.9                       | 7.56    | 15.13     | 58.74               | 31.50                         | 20.60                                      | Umballa, 14 months; Sialkot, 6½ months; march- ing, 1 month; Dett. Topa, 5 months.                            | 3 0                        |
| 3rd "                     | 586                      | 1,016                   | 7                      | 10         | 60.65               | 1733.8                       | 11.95   | 17.06     | 103.50              | 37.88                         | 21.85                                      | Muttra, 9 months; Meerut, 1½ months; marching, 14 months; Depot, Muttra, 2 months; Dett. Cha- kra, 6½ months. | 4 2                        |
| 6th "                     | 31                       | 10                      | —                      | —          | 1.38                | 322.6                        | —       | —         | 44.53               | 16.29                         | 50.51                                      | Marching, 4 month (left on the 16th January for Mhow).                                                        | 11 0                       |
| 7th "                     | 604                      | 632                     | 3                      | —          | 40.80               | 1029.8                       | 4.97    | —         | 67.55               | 24.73                         | 24.01                                      | Umballa, 8 months; marching, 3 months (ar- rived from Mhow on the 4th February 1888).                         | 4 11                       |
| 8th Hussars               | 576                      | 836                     | 10                     | 15         | 53.97               | 1456.6                       | 17.36   | 26.04     | 91.96               | 33.66                         | 23.11                                      | Meerut, 11 months; marching, 1 month                                                                          | 9 11½                      |
| 17th Lancers              | 607                      | 624                     | 7                      | 9          | 34.29               | 1028.0                       | 11.53   | 14.83     | 56.49               | 20.68                         | 20.11                                      | Lucknow, 13 months; Dett. Ranikhet, 13 months                                                                 | 9 2                        |
| Total                     | 3,685                    | 4,968                   | 62                     | 53         | 275.76              | 1348.2                       | 16.82   | 14.38     | 74.83               | 27.39                         | 20.32                                      |                                                                                                               |                            |
| ROYAL HORSE ARTILLERY.    |                          |                         |                        |            |                     |                              |         |           |                     |                               |                                            |                                                                                                               |                            |
| D/A Royal Horse Artillery | 147                      | 107                     | 3                      | —          | 5.56                | 727.9                        | 20.41   | —         | 37.82               | 13.84                         | 19.02                                      | Sialkot, 11½ months; Meeran Meer, ½ month; march- ing, ½ month; Dett. Topa, 6½ months.                        | 11 11                      |
| E/A "                     | 151                      | 146                     | 3                      | 3          | 9.91                | 966.9                        | 19.87   | 13.25     | 65.63               | 24.02                         | 24.84                                      | Lucknow, 13 months; Dett. Ranikhet, 6½ months                                                                 | 11 11                      |



| Corps.                      | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average Time to Sick to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year.                                                                            | Years of Service in India. |
|-----------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|---------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------|
|                             |                          |                         |                        |            |                     | Admissions into Hospital.    | Deaths. | Invalids. | Average Daily Sick. |                                       |                                            |                                                                                                               |                            |
| F/A Royal Horse Artillery   | 177                      | 135                     | 5                      | 8          | 11.28               | 1101.7                       | 28.25   | 45.20     | 63.73               | 23.32                                 | 21.17                                      | Meerut, 11 months; marching, 1 month                                                                          | 12 1                       |
| G/A "                       | 158                      | 118                     | 3                      | 1          | 6.75                | 746.8                        | 18.99   | 6.33      | 48.73               | 15.64                                 | 20.94                                      | Umberla, 10½ months; marching, 1½ months                                                                      | 13 1                       |
| L/A "                       | 171                      | 199                     | 4                      | 7          | 11.05               | 1163.7                       | 23.39   | 40.94     | 64.68               | 23.65                                 | 20.32                                      | Meerut, 11½ months; marching, ½ month                                                                         | 11 1                       |
| K/B "                       | 166                      | 139                     | 4                      | —          | 6.45                | 837.3                        | 24.10   | —         | 38.98               | 14.23                                 | 16.98                                      | Umberla, 10½ months; marching, 1½ months                                                                      | 8 0                        |
| N/B "                       | 168                      | 273                     | 8                      | 1          | 11.00               | 1685.0                       | 47.68   | 5.95      | 65.46               | 23.96                                 | 14.75                                      | Rawal Pindi and Cholera Camps, 13 months                                                                      | 10 1½                      |
| ROYAL ARTILLERY.            |                          |                         |                        |            |                     |                              |         |           |                     |                                       |                                            |                                                                                                               |                            |
| A/I Royal Artillery         | 153                      | 265                     | 4                      | 1          | 20.85               | 1928.1                       | 26.14   | 6.54      | 136.27              | 40.88                                 | 25.87                                      | Cawnpore and Practice Camp, 13 months                                                                         | 5 2                        |
| B/I "                       | 141                      | 211                     | —                      | 2          | 10.54               | 1466.5                       | —       | 14.18     | 74.75               | 27.36                                 | 18.28                                      | Agra, 9½ months; marching, 2½ months                                                                          | 7 1½                       |
| G/I "                       | 150                      | 224                     | 1                      | 4          | 10.76               | 1463.3                       | 6.67    | 26.07     | 71.73               | 26.21                                 | 17.58                                      | Cawnpore, 1½ months; Ferozepore, 8½ months; Meerut, ½ month; marching 3 months.                               | 7 1½                       |
| 1/1 Northern Division, R.A. | 104                      | 118                     | 3                      | 1          | 6.23                | 1154.6                       | 28.86   | 9.63      | 89.90               | 21.02                                 | 19.32                                      | Quetta and Field Manoeuvres, 13 months                                                                        | 2 10                       |
| 1/1 Eastern                 | 73                       | 163                     | 1                      | 1          | 4.13                | 1430.6                       | 13.89   | 13.89     | 53.36               | 40.99                                 | 14.68                                      | Rawal Pindi, 2 months; Khayra Gully, 5½ months; marching 1 month (arrived from Burma on the 14th April 1888). | 4 2                        |
| 1/1 London                  | 83                       | 114                     | —                      | 3          | 5.76                | 1373.5                       | —       | 24.10     | 69.40               | 35.40                                 | 18.49                                      | Rawal Pindi, 3½ months; Campbellpore, 8 months; marching, ½ month.                                            | 4 2                        |
| 1/1 Scottish                | 94                       | 136                     | —                      | 3          | 7.31                | 1446.8                       | —       | 21.28     | 78.09               | 28.53                                 | 19.75                                      | Allahabad and Practice Camp, 11½ months; marching, ½ month.                                                   | 3 1½                       |
| 1/1 Welsh                   | 83                       | 133                     | 4                      | —          | 7.87                | 1903.6                       | 43.19   | —         | 94.83               | 34.70                                 | 18.23                                      | Roorkee and Practice Camp, 13 months                                                                          | 1 2                        |
| 2/1 Eastern                 | 108                      | 316                     | 2                      | 13         | 18.98               | 2325.9                       | 18.52   | 120.37    | 175.74              | 64.32                                 | 31.98                                      | Delhi, 2 months; Meerut, ½ month; Roorkee, 2½ months; Chakrata, 6½ months; marching, ½ months.                | 2 1½                       |

| Corps.                   | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average Sick Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year.                                                                                                                                                                           | Years of Service in India. |
|--------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|------------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                          |                          |                         |                        |            |                     | Admissions into Hospital.    | Deaths. | Invalids. | Average Daily Sick. |                                    |                                            |                                                                                                                                                                                                              |                            |
| 2/1 C. P. Division, R.A. | 108                      | 147                     | 8                      | 2          | 7.43                | 1361.1                       | 27.78   | 18.92     | 69.07               | 25.28                              | 18.57                                      | Rawal Pindi and Practice Camp, 4½ months; Kalabagh and Gora Douka, 7 months; marching, 1 month.                                                                                                              | 2 11                       |
| 2/1 London               | 112                      | 105                     | 4                      | 1          | 6.47                | 937.6                        | 35.71   | 8.93      | 57.77               | 21.14                              | 22.55                                      | Unbala, 6 months; Jutogh, 6 months; marching, 1 month.                                                                                                                                                       | 1 2                        |
| 2/1 Scottish             | 111                      | 190                     | 1                      | 4          | 9.23                | 1711.7                       | 9.01    | 38.04     | 83.15               | 30.43                              | 17.78                                      | Rawal Pindi and Practice Camp, 2½ months; Thobha, 5½ months; marching, 2½ months (Hazara, 1½ months, from 30th September to 13th November); Det. Dalhousie, 12 months. Roorkee and Practice Camp, 12 months. | 5 2                        |
| 2/1 Welsh                | 95                       | 100                     | 2                      | —          | 5.51                | 1052.6                       | 21.05   | —         | 58.00               | 21.23                              | 20.17                                      | Rawal Pindi, 4½ months; Bara Gully, 5½ months; marching, 1 month (Hazara, 1½ months, from 29th September to 12th November, 1888.)                                                                            | 1 2                        |
| 3/1 South Irish          | 98                       | 87                      | 2                      | —          | 5.05                | 897.8                        | 20.41   | —         | 57.65               | 21.10                              | 23.77                                      | Port Lahore and Practice Camp, 3 months; Roorkee and Practice Camp, 9 months; Det. Amritsar, 3½ months.                                                                                                      | 3 2                        |
| 3/1 Scottish             | 99                       | 103                     | 1                      | 5          | 8.39                | 1849.5                       | 10.10   | 50.51     | 84.75               | 31.02                              | 15.91                                      | Roorkee and Practice Camp, 12 months.                                                                                                                                                                        | 5 2                        |
| 4/1 Eastern              | 94                       | 127                     | 1                      | —          | 5.46                | 1351.1                       | 10.04   | —         | 58.09               | 21.26                              | 15.74                                      | Roorkee and Practice Camp, 12 months.                                                                                                                                                                        | 1 2                        |
| 5/1 Western              | 96                       | 137                     | 2                      | 5          | 10.52               | 1947.9                       | 20.83   | 52.03     | 109.58              | 40.11                              | 20.59                                      | Quetta, 2½ months; Agra, 9½ months; marching, 1 month.                                                                                                                                                       | 9 0                        |
| 5/1 Southern             | 83                       | 170                     | 8                      | 7          | 8.38                | 2048.2                       | 36.39   | 64.34     | 100.72              | 36.86                              | 18.00                                      | Rawal Pindi, 9½ months; marching, 1 month (left for Bombay on the 28th October 1888); Det. Fort Attock, 5½ months.                                                                                           | 12 10                      |
| 5/1 Welsh                | 108                      | 116                     | 5                      | —          | 6.97                | 1074.1                       | 46.30   | —         | 64.54               | 23.02                              | 21.99                                      | Port Allanaad, 2 months; Quetta and Field manoeuvres, 9½ months; marching, 1 month.                                                                                                                          | 9 2                        |
| 6/1 Southern             | 3                        | —                       | —                      | —          | —                   | —                            | —       | —         | —                   | —                                  | —                                          | Marching, 1 month (left for Bombay on the 11th January 1888).                                                                                                                                                | 12 10                      |
| 7/1 Northern             | 97                       | 203                     | —                      | 7          | 9.04                | 2113.4                       | —       | 72.16     | 93.20               | 34.11                              | 16.14                                      | Barrackpore, 12 months.                                                                                                                                                                                      | 10 1                       |
| 7/1 Eastern              | 111                      | 227                     | 3                      | 2          | 5.97                | 2045.0                       | 27.03   | 19.02     | 53.78               | 19.63                              | 9.63                                       | Rawal Pindi, 6 months; Thobha, 4½ months; marching, 1 month; Det. Fort Attock, 4½ months.                                                                                                                    | 7 2                        |
| 7/1 Scottish             | 94                       | 309                     | 8                      | —          | 10.11               | 3237.2                       | 31.91   | —         | 107.55              | 30.36                              | 11.97                                      | Jhanset, 12 months.                                                                                                                                                                                          | 1 2                        |

| Corps.                      | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average to each Soldier. | Average Duration of each Case of Sicknes. | Stations occupied during the Year.                                                                                                                | Years of Service in India. |
|-----------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|--------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                             |                          |                         |                        |            |                     | Admissions into Hos- pital.  | Deaths. | Invalids. | Average Daily Sick. |                          |                                           |                                                                                                                                                   |                            |
| 8/1 Northern Division, R.A. | 92                       | 123                     | 2                      | 1          | 7.42                | 1337.0                       | 21.74   | 10.87     | 80.65               | 29.52                    | 22.08                                     | Calcutta, 12 months                                                                                                                               | Yrs. mo. 9 3               |
| 8/1 Scottish                | 103                      | 512                     | 1                      | 4          | 10.87               | 3023.1                       | 9.71    | 38.83     | 105.53              | 38.63                    | 12.75                                     | Delhi, 11½ months; Meerut, ½ month; Dett. Agra, 3 months.                                                                                         | 1 2                        |
| 9/1 Northern                | 68                       | 61                      | —                      | —          | .42                 | 887.1                        | —       | —         | 6.18                | 2.26                     | 2.52                                      | Darjeeling, 3½ months; marching, ½ month (Sik. kin, 8 months, from 16th March 1888 to 21st June 1888, and from 7th August to 31st December 1888). | 10 1                       |
| 9/1 Eastern                 | 105                      | 115                     | 3                      | 2          | 6.23                | 1035.2                       | 28.57   | 19.05     | 59.53               | 21.72                    | 19.83                                     | Ferozepore, 12 months; Dett. Amritsar 8½ months                                                                                                   | 7 11½                      |
| 9/1 C.P.                    | 98                       | 128                     | 2                      | 2          | 8.14                | 1306.1                       | 20.41   | 20.41     | 88.06               | 30.40                    | 23.28                                     | Umballa, 4½ months; Jutogh, 6½ months; marching, ½ month.                                                                                         | 10 1                       |
| G/2 Royal Artillery         | 1                        | —                       | —                      | —          | —                   | —                            | —       | —         | —                   | —                        | —                                         | Marching, ½ month (arrived on the 17th October and left for England on the 22nd October 1888).                                                    | 13 8½                      |
| H/2 "                       | 186                      | 182                     | —                      | 3          | 9.43                | 933.3                        | —       | 15.38     | 46.36               | 17.70                    | 18.96                                     | Meerut, 11½ months; Agra, ½ month; marching, ½ month.                                                                                             | 1 0                        |
| J/2 "                       | 155                      | 203                     | 2                      | 2          | 8.70                | 1309.7                       | 12.90   | 12.90     | 56.71               | 20.76                    | 15.85                                     | Rawal Pindi, 4½ months; Campbellpore, 7½ months; marching, ½ month.                                                                               | 10 1½                      |
| K/2 "                       | 28                       | 35                      | —                      | —          | .85                 | 1250.0                       | —       | —         | 30.36               | 11.11                    | 8.89                                      | Barrackpore, 1½ months; marching, 3 days (ar- rived from England on the 3rd November 1888).                                                       | 0 2                        |
| N/2 "                       | 121                      | 262                     | 3                      | 7          | 14.22               | 2165.3                       | 24.79   | 57.85     | 117.63              | 43.01                    | 19.86                                     | Allahabad and Practice Camp, 13 months                                                                                                            | 1 0                        |
| R/2 "                       | 147                      | 155                     | 3                      | 4          | 9.32                | 1084.4                       | 20.41   | 27.21     | 63.40               | 33.20                    | 22.01                                     | Mooltan, 13 months; Dett. Dalhousie, 12 months                                                                                                    | 10 1½                      |
| K/3 "                       | 154                      | 258                     | 1                      | 2          | 10.46               | 1675.3                       | 6.49    | 12.99     | 67.86               | 24.84                    | 14.82                                     | Meen Meer, 9½ months; marching, 2½; Dett. Dalhousie, 12 months.                                                                                   | 8 0                        |
| L/3 "                       | 105                      | 363                     | 8                      | 1          | 14.11               | 2200.0                       | 48.48   | 6.06      | 86.52               | 31.30                    | 14.23                                     | Peshawar, and Practice and Cholera Camps, 12 months; Dett. Cherat, 5½ months.                                                                     | 8 0                        |
| M/3 "                       | 160                      | 293                     | 5                      | —          | 12.66               | 1831.2                       | 31.25   | —         | 79.12               | 28.96                    | 15.81                                     | Peshawar, ½ month; Jullundur, 9½ months; Meen Meer, ½ month; marching, ½ month; Depot, Jullundur, ½ month.                                        | 8 0                        |
| N/3 "                       | 165                      | 267                     | 8                      | —          | 9.80                | 1722.6                       | 51.61   | —         | 63.81               | 23.35                    | 13.56                                     | Rawal Pindi and Cholera Camps, 12 months                                                                                                          | 7 11½                      |
| O/3 "                       | 160                      | 134                     | 3                      | 4          | 7.73                | 863.3                        | 20.00   | 26.67     | 51.63               | 18.86                    | 21.11                                     | Lucknow, 9½ months; marching, 2½ months                                                                                                           | 7 11½                      |

| Corps.                   | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average to each Sick Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year.                                                                                                                           | Years of Service in India. |
|--------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|-------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                          |                          |                         |                        |            |                     | Admissions into Hos- pital.  | Deaths. | Invalids. | Average Daily Sick. |                               |                                            |                                                                                                                                                              |                            |
| P/3 Royal Artillery      | 144                      | 189                     | 1                      | 4          | 6'80                | 1173'6                       | 6'94    | 27'78     | 47'22               | 17'28                         | 14'73                                      | Barrackpore, 10½ months; marching, 12½ months -                                                                                                              | 11 1                       |
| Q/3 "                    | 142                      | 173                     | 1                      | 3          | 7'18                | 1218'3                       | 7'04    | 21'13     | 50'56               | 18'51                         | 13'19                                      | Jubbulpore, 12 months -                                                                                                                                      | 11 1                       |
| R/3 "                    | 143                      | 174                     | 2                      | 3          | 9'09                | 1216'8                       | 13'99   | 20'98     | 63'57               | 23'27                         | 19'12                                      | Dinapore, 12 months -                                                                                                                                        | 11 1                       |
| K/4 "                    | 196                      | 189                     | -                      | 1          | 11'19               | 1016'1                       | -       | 5'38      | 60'16               | 22'02                         | 21'07                                      | Meerut, 12 months -                                                                                                                                          | 2 0                        |
| L/4 "                    | 162                      | 250                     | 1                      | 3          | 12'62               | 1643'2                       | 6'17    | 18'62     | 77'90               | 28'51                         | 18'48                                      | Fyzabad, 10½ months; marching, 1½ months; Dett. Lucknow, 1 month.                                                                                            | 11 1                       |
| M/4 "                    | 145                      | 333                     | 1                      | 2          | 11'38               | 2296'0                       | 6'90    | 13'79     | 78'48               | 23'72                         | 12'51                                      | Saugor, 12 months -                                                                                                                                          | 2 1½                       |
| O/4 "                    | 153                      | 307                     | 1                      | 6          | 11'67               | 2006'5                       | 6'54    | 39'22     | 76'27               | 27'02                         | 13'91                                      | Meer Meer, 9½ months; marching, 2½ months; Dett. Dahnousie, 12 months.                                                                                       | 11 11                      |
| P/4 "                    | 148                      | 248                     | 3                      | 2          | 9'15                | 1675'7                       | 20'27   | 13'51     | 61'92               | 22'63                         | 13'50                                      | Nowzong, 9½ months; marching, 2½ months; Dett. Jhansi, 1 month; Depôt, Nowzong, 2½ months.                                                                   | 2 0                        |
| Q/4 "                    | 154                      | 289                     | 2                      | 2          | 13'72               | 1551'9                       | 12'39   | 12'99     | 89'09               | 32'61                         | 21'01                                      | Barilly and Practice Camp, 12 months; Dett. Ranikhet, 12 months.                                                                                             | 2 0                        |
| Total                    | 6,760                    | 9,988                   | 133                    | 136        | 476'63              | 1488'7                       | 19'82   | 50'27     | 71'09               | 26'02                         | 17'48                                      |                                                                                                                                                              |                            |
| H. Coy., Royal Engineers | 83                       | 12                      | 1                      | 1          | 25                  | 323'6                        | 30'30   | 30'30     | 7'58                | 2'77                          | 7'62                                       | Roorkee, 12 months; Dett. Calcutta, 12 months; Allahabad, 12 months; Chakrata, 6½ months.                                                                    | 21 0                       |
| INFANTRY.                |                          |                         |                        |            |                     |                              |         |           |                     |                               |                                            |                                                                                                                                                              |                            |
| 2nd R.W. Surrey Regiment | 812                      | 941                     | 9                      | 13         | 31'86               | 1128'9                       | 11'08   | 16'01     | 39'24               | 14'36                         | 12'39                                      | Umballa, 9½ months; marching, ½ month (arrived from Burma on the 7th March 1888); Dett. Solon, 7 months; Dagshai, 7½ months; Depôt, Campbellpore, 1½ months. | 10 10                      |
| 1st East Kent            | 1,010                    | 979                     | 14                     | 18         | 60'14               | 969'3                        | 13'86   | 17'82     | 50'54               | 21'79                         | 22'48                                      | Barilly, 3½ months; Ranikhet, 7½ months; Lucknow, ½ month; marching, ½ month; Depôt, Ranikhet, 3 months.                                                     | 1 9                        |
| 2nd R. Lancaster         | 193                      | 295                     | 5                      | 16         | 17'14               | 1528'5                       | 25'91   | 82'90     | 88'81               | 52'50                         | 21'27                                      | Quetta, 2½ months; marching, 3 days (left for Kurrahee on the 15th March 1888).                                                                              | 8 10                       |

| Corps.                       | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average Duration of each Case of Sickness. | Stations occupied during the Year. | Years of Service in India. |
|------------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|--------------------------------------------|------------------------------------|----------------------------|
|                              |                          |                         |                        |            |                     | Admissions into Hospital.    | Deaths. | Invalids. | Average Daily Sick. |                                            |                                    |                            |
| 2nd Northumberland Fusiliers | 922                      | 1,134                   | 22                     | 15         | 51.81               | 1229.9                       | 23.86   | 18.27     | 59.45               | 21.76                                      | 17.69                              | 8 11                       |
| 2nd R. Warwickshire          | -                        | 960                     | 1,276                  | 9          | 51.32               | 1329.2                       | 10.42   | 9.33      | 53.46               | 19.27                                      | 14.72                              | 10 2                       |
| 2nd Liverpool Regiment       | -                        | 940                     | 1,447                  | 29         | 73.61               | 1539.4                       | 6.39    | 30.85     | 78.31               | 28.66                                      | 18.62                              | 11 2                       |
| 2nd Norfolk                  | -                        | 797                     | 1,068                  | 10         | 62.90               | 1340.0                       | 5.03    | 12.55     | 78.92               | 28.89                                      | 21.56                              | 14 1                       |
| 2nd Lincolnshire Regiment    | -                        | 703                     | 1,561                  | 66         | 80.57               | 2230.5                       | 24.18   | 88.83     | 114.61              | 41.95                                      | 18.89                              | 6 11                       |
| 2nd Devonshire               | -                        | 948                     | 2,107                  | 23         | 74.85               | 2222.6                       | 17.83   | 24.26     | 78.96               | 28.90                                      | 13.00                              | 11 94                      |
| 1st Suffolk Regiment         | -                        | 951                     | 933                    | 13         | 49.01               | 1007.4                       | 30.46   | 13.67     | 51.54               | 18.86                                      | 18.72                              | 12 2                       |
| 2nd West Yorkshire Regiment  | 976                      | 1,304                   | 11                     | 11         | 79.87               | 1336.1                       | 11.27   | 11.27     | 81.83               | 20.93                                      | 23.42                              | 10 2                       |
| 2nd Leicestershire           | 882                      | 967                     | 7                      | 42         | 60.21               | 1096.4                       | 7.94    | 47.62     | 78.47               | 28.72                                      | 29.20                              | 12 2                       |

| Corps.                      | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average Time to Sick Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year.                                                                                                                                                                     | Years of Service in India. |
|-----------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|-------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                             |                          |                         |                        |            |                     | Admissions into Hospital.    | Deaths. | Invalids. | Average Daily Sick. |                               |                                            |                                                                                                                                                                                                        |                            |
| 2nd Royal Irish Regiment    | 875                      | 1,250                   | 13                     | 8          | 57.16               | 1438.2                       | 14.86   | 9.14      | 65.33               | 23.91                         | 16.02                                      | Nowshera, 10 months; marching, 4 month (Harcara, 11 months, from 30th September to 14th November 1888); wing, Cherat, 4 months; Dett. Fort Attock, 84 months; Depot, Nowshera, 14 months.              | 3 11                       |
| 2nd Royal Scots Fusiliers   | 1055                     | 891                     | 5                      | 6          | 58.91               | 844.5                        | 4.74    | 5.09      | 55.84               | 20.44                         | 24.20                                      | Umballa, 34 months; Dagshai, 74 months; marching, 1 month; Dett. Dagshai, 24 months; Depot, (Head Quarters in Burma.) Dett. Dagshai, 74 months; Depot, Umballa, 12 months.                             | 6 11                       |
| 2nd Cheshire Regiment       | 49                       | 44                      | 1                      | 3          | 4.32                | 898.0                        | 20.41   | 61.22     | 88.16               | 32.27                         | 35.93                                      | Lucknow, 12 months; Dett. Ranikhet, 12 months                                                                                                                                                          | 15 14                      |
| 1st R. Welsh Fusiliers      | 919                      | 1,182                   | 13                     | 45         | 88.23               | 1286.2                       | 14.15   | 48.97     | 96.01               | 35.14                         | 27.32                                      | Bareilly, 13 months; marching, 3 month (arrived from Burma on the 9th November 1888).                                                                                                                  | 8 34                       |
| 2nd South Wales Borderers   | 127                      | 169                     | 1                      | —          | 9.66                | 1350.7                       | 7.57    | —         | 76.06               | 27.84                         | 20.92                                      | Meerut, 12 months; Dett. Delhi, 9 months; Chakrata, 6 months.                                                                                                                                          | 8 4                        |
| 1st K.O. Scottish Borderers | 1075                     | 1,655                   | 11                     | 80         | 91.46               | 1539.5                       | 10.23   | 27.91     | 85.08               | 31.14                         | 20.23                                      | Bareilly, 24 months; Chakrata, 7 months; Shahjehanpur, 4 month; Lucknow, 4 month; marching, 14 months; wing, Shahjehanpur, 104 months; Depot, Shahjehanpur, 3 month.                                   | 13 14                      |
| 2nd Scottish Rifles         | 889                      | 1,169                   | 12                     | 17         | 62.06               | 1300.3                       | 13.35   | 18.91     | 69.05               | 25.27                         | 19.44                                      | Quetta, and Field Manoeuvres, 12 months -                                                                                                                                                              | 9 14                       |
| 1st Worcester Regiment      | 970                      | 1,089                   | 9                      | 19         | 55.17               | 1122.7                       | 9.28    | 19.69     | 56.88               | 20.82                         | 18.54                                      | Ferozepore, 114 months; marching, 3 month; wing, Benares, 2 months; Dett. Dalhousie, 12 months; Meen Meer, 1 month.                                                                                    | 9 10                       |
| 1st East Lancashire         | 937                      | 1,693                   | 11                     | 6          | 87.10               | 1789.5                       | 11.74   | 6.40      | 92.96               | 34.02                         | 12.93                                      | Allahabad, 12 months; Dett. Fort Allahabad, 103 months; Chunar, 4 months; Ranikhet, 12 months; Jabulpore, 2 months; Chakrata, 6 months.                                                                | 8 0                        |
| 1st East Surrey             | 982                      | 1,787                   | 14                     | 11         | 87.78               | 1877.1                       | 14.71   | 11.55     | 92.21               | 33.75                         | 17.96                                      | Meen Meer, 10 months; marching, 4 month (left for Adee on the 10th November 1888); Dett. Fort Lahore, 10 months; Dalhousie, 12 months; Sialkot 12 months; Dett. Amritsar, 12 months; Thobha, 6 months. | 3 114                      |
| 1st West Riding             | 655                      | 1,020                   | 12                     | 4          | 46.01               | 1537.3                       | 18.32   | 6.11      | 68.72               | 25.15                         | 16.15                                      |                                                                                                                                                                                                        | 13 1                       |
| 1st Border                  | 976                      | 1,576                   | 13                     | 27         | 72.17               | 1614.8                       | 12.30   | 27.66     | 73.94               | 27.06                         | 16.76                                      |                                                                                                                                                                                                        | 13 2                       |

| Corps.                                   | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average Duration of each Case of Sickness. | Stations occupied during the Year. |                                                                                                                                                                                                                      | Years of Service in India. |
|------------------------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|--------------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                          |                          |                         |                        |            |                     | Admissions into Hospital.    | Deaths. | Invalids. | Average Daily Sick. |                                            |                                    |                                                                                                                                                                                                                      |                            |
| 2nd Royal Sussex Regiment                | 885                      | 684                     | 20                     | 11         | 29.56               | 775.4                        | 22.35   | 12.29     | 33.03               | 12.09                                      | 15.59                              | Rawal Pindi, 4 months; Camp Gharial, 5½ months; Ferozepore, 3 months; marching, 1 month (Hazara, 1½ months, from 29th September to 11th November 1888); Dett. Campbellpore, 1½ months; Depot, Camp Gharial, 1 month. | 3 0                        |
| 2nd Derbyshire "                         | 641                      | 968                     | 9                      | 20         | 53.00               | 1494.5                       | 14.04   | 31.20     | 82.68               | 30.26                                      | 20.25                              | Dum Dum, 7½ months; marching, 1 month (Sikim, 4½ months); Dett. Barrackpore, 7½ months; Darjeeling, 12 months; Dinapore, 2 months; Saugor, 1½ months.                                                                | 6 2                        |
| 2nd King's Own Yorkshire Light Infantry. | 805                      | 904                     | 9                      | 8          | 46.72               | 1183.0                       | 11.18   | 9.94      | 60.82               | 22.15                                      | 19.73                              | Quetta and Field Manoeuvre, 9½ months; marching, 3 days (arrived from Kurrahee on the 9th March 1888).                                                                                                               | 1 10                       |
| 4th King's Royal Rifle Corps             | 879                      | 1,162                   | 11                     | 33         | 61.83               | 1310.6                       | 12.51   | 37.64     | 70.34               | 25.74                                      | 19.64                              | Umballa, 1½ months; Chakrata, 7½ months; Meerut, 1½ months; marching, 2½ months; Dett. Chakrata, 3 months; Depot, Chakrata, 1½ months.                                                                               | 12 1                       |
| 2nd Wiltshire Regiment                   | 845                      | 1,120                   | 11                     | 5          | 58.62               | 1325.4                       | 13.03   | 5.92      | 69.37               | 25.30                                      | 19.16                              | Umballa, 2½ months; Subathu, 7½ months; marching, 1½ months; Dett. Jutoch, 12 months; Meeran Meer, 1½ months.                                                                                                        | 6 11                       |
| 2nd Manchester "                         | 964                      | 1,608                   | 16                     | 27         | 71.66               | 1668.0                       | 16.60   | 23.01     | 74.31               | 27.21                                      | 16.31                              | Agra, 12 months; Dett. Fatehgarh, 6½ months; Chakrata, 6½ months.                                                                                                                                                    | 6 2                        |
| 2nd Highland Light Infantry              | 992                      | 1,697                   | 18                     | 5          | 68.50               | 1710.7                       | 18.15   | 5.04      | 69.03               | 25.27                                      | 14.77                              | Peshawar and Cholera Camp, 12 months; Dett. Cherat, 6½ months.                                                                                                                                                       | 4 2                        |
| 2nd Seaforth Highlanders                 | 910                      | 1,072                   | 5                      | 13         | 57.71               | 1178.0                       | 5.49    | 14.29     | 63.42               | 23.21                                      | 19.70                              | Bareilly, 8½ months; Rawal Pindi, 1 month; marching, 1 month (Hazara, 1½ months, from 2nd October to 16th November 1888); Dett. Moradabad, 10 months; Depot, Bareilly, 2 months.                                     | 9 9½                       |
| 1st Royal Irish Fusiliers                | 1,014                    | 2,145                   | 8                      | 14         | 76.27               | 2115.4                       | 7.89    | 13.81     | 75.22               | 27.63                                      | 13.01                              | Peshawar, 6½ months; Cherat, 5½ months; marching, 1 month; Depot, Peshawar, 5½ months.                                                                                                                               | 5 2                        |
| 1st Connaught Rangers                    | 977                      | 1,362                   | 5                      | 11         | 69.73               | 1894.1                       | 5.12    | 11.26     | 71.37               | 26.12                                      | 18.74                              | Jullundur, 12 months; Dett. Dinapore, 1½ months; Bhageu, 6½ months.                                                                                                                                                  | 9 2                        |

| Corps.                          | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Daily Sick. | Ratio per 1,000 of Strength. |         |           |                     | Average Time to each Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year.                                                                                     | Years of Service in India. |
|---------------------------------|--------------------------|-------------------------|------------------------|------------|---------------------|------------------------------|---------|-----------|---------------------|-------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                 |                          |                         |                        |            |                     | Admissions into Hospital.    | Deaths. | Invalids. | Average Daily Sick. |                               |                                            |                                                                                                                        |                            |
| 1st Leinster Regiment           | 794                      | 1,405                   | 12                     | 29         | 95.39               | 1769.5                       | 15.11   | 36.68     | 120.14              | 43.97                         | 24.86                                      | Calcutta, 12 months; Dett. Dum Dum, 12 months; Barrackpore, 34 months.                                                 | 11 14                      |
| 2nd Royal Munster Fusiliers     | 74                       | 174                     | 1                      | 1          | 8.39                | 2351.4                       | —       | —         | 113.38              | 41.50                         | 17.05                                      | Bareilly, 1 month; marching, 1 month (arrived from Burma on the 27th November 1888); wing, Shahjehanpur, 1 month.      | 4 9                        |
| 1st Bn. Rifle Brigade           | 42                       | 139                     | 1                      | 1          | 3.72                | 3309.5                       | —       | —         | 89.57               | 32.42                         | 9.79                                       | Bareilly, 1 month; marching, 1 month (arrived from Burma on the 21st December 1888).                                   | 8 34                       |
| 4th Bn. Rifle Brigade           | 865                      | 989                     | 24                     | 3          | 38.36               | 1143.4                       | 27.75   | 3.47      | 44.35               | 16.23                         | 14.20                                      | Lucknow, 1 month; Dinnagee, 9 months; marching, 1 month (left for Burma on 2nd December 1888); Dett. Chunar, 8 months. | 15 1                       |
| Total                           | 30,230                   | 42,965                  | 421                    | 620        | 3135.80             | 1418.6                       | 13.90   | 20.48     | 71.53               | 26.13                         | 13.45                                      | Various station hospitals.                                                                                             |                            |
| Men of various Corps, marching. | 200                      | 52                      | 3                      | 1          | 1.76                | 260.0                        | 15.00   | —         | 8.80                | 3.22                          | 12.39                                      | Various station hospitals.                                                                                             |                            |
| Garrison Staff and Departments. | 1,234                    | 1,166                   | 27                     | 59         | 111.80              | 944.9                        | 21.83   | 47.81     | 90.60               | 33.16                         | 35.09                                      | Various station hospitals.                                                                                             |                            |
| Grand Total                     | 42,141                   | 59,141                  | 647                    | 869        | 3032.30             | 1403.4                       | 15.35   | 20.62     | 71.96               | 26.34                         | 13.77                                      |                                                                                                                        |                            |



ABSTRACT No. XLI.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the ADMISSIONS, MORTALITY, and INVALIDING in each CORPS serving in the MADRAS COMMAND during the Year 1888.

| Corps.                         | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |         |           |                          | Average Duration of each Case of Sickness. | Stations occupied during the Year. | Years of Service in India.                    |                               |
|--------------------------------|--------------------------|-------------------------|------------------------|------------|---------------------------------|------------------------------|---------|-----------|--------------------------|--------------------------------------------|------------------------------------|-----------------------------------------------|-------------------------------|
|                                |                          |                         |                        |            |                                 | Admissions into Hos- pital.  | Deaths. | Invalids. | Average Constantly Sick. |                                            |                                    |                                               |                               |
|                                |                          |                         |                        |            |                                 |                              |         |           |                          |                                            |                                    |                                               | Average Time to each Soldier. |
| CAVALRY.                       |                          |                         |                        |            |                                 |                              |         |           |                          |                                            |                                    |                                               |                               |
| 7th Hussars                    | 556                      | 664                     | 8                      | 11         | 38                              | 1194.24                      | 14.39   | 19.78     | 68.34                    | 25.01                                      | 20.94                              | Secunderabad                                  | - - - 12 2 0                  |
| 21st Hussars                   | 579                      | 811                     | 7                      | 13         | 50                              | 1400.69                      | 12.09   | 22.43     | 80.36                    | 31.61                                      | 22.56                              | Bangalore                                     | - - - 12 1 0                  |
| Details of Cavalry             | 15                       | 28                      | 1                      | —          | 2                               | 1733.33                      | 66.66   | —         | 183.33                   | 48.80                                      | 28.15                              |                                               |                               |
| Total                          | 1,150                    | 1,501                   | 16                     | 24         | 90                              | 1305.21                      | 13.91   | 20.87     | 78.26                    | 28.64                                      | 21.94                              |                                               |                               |
| ROYAL ARTILLERY.               |                          |                         |                        |            |                                 |                              |         |           |                          |                                            |                                    |                                               |                               |
| H/R Bde. Royal Horse Artillery | 100                      | 189                     | 4                      | 4          | 11                              | 1181.25                      | 25.00   | 25.00     | 68.75                    | 35.16                                      | 21.30                              | Secunderabad                                  | - - - 12 3 1                  |
| M/B " " "                      | 155                      | 166                     | 1                      | 8          | 13                              | 1006.45                      | 6.45    | 51.61     | 83.87                    | 30.69                                      | 30.50                              | Bangalore                                     | - - - 12 11 0                 |
| D/1 " Royal Artillery          | 110                      | 176                     | —                      | 1          | 8                               | 1600.00                      | —       | 9.09      | 72.72                    | 26.61                                      | 16.63                              | Kamptee, 7; and Secunderabad, 2. Transferred. | - - - 12 5 2                  |
| P/1 " " "                      | 148                      | 245                     | 1                      | 6          | 13                              | 1655.40                      | 6.76    | 40.56     | 87.84                    | 32.15                                      | 19.42                              | Bangalore                                     | - - - 12 9 0                  |
| Q/1 " " "                      | 146                      | 182                     | —                      | 2          | 10                              | 1246.57                      | —       | 13.69     | 68.49                    | 25.07                                      | 30.11                              | Secunderabad                                  | - - - 12 10 2                 |
| R/1 " " "                      | 161                      | 161                     | —                      | 4          | 10                              | 1000.00                      | —       | 24.84     | 62.11                    | 32.73                                      | 22.73                              | Belgaum                                       | - - - 12 10 0                 |
| S/1 " " "                      | 144                      | 212                     | 1                      | 4          | 12                              | 1472.22                      | 6.94    | 27.77     | 83.33                    | 30.50                                      | 20.71                              | Bellary                                       | - - - 12 9 0                  |
| T/1 " " "                      | 140                      | 220                     | 2                      | 1          | 9                               | 1476.51                      | 13.42   | 6.71      | 60.40                    | 32.11                                      | 14.97                              | St. Thomas' Mount, 101; and Kamptee, 11       | - - - 12 4 0                  |

| Corps.                        | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |         |           |                          | Average Duration of each Case of Sickness. | Stations occupied during the Year.         | Years of Service in India. |
|-------------------------------|--------------------------|-------------------------|------------------------|------------|---------------------------------|------------------------------|---------|-----------|--------------------------|--------------------------------------------|--------------------------------------------|----------------------------|
|                               |                          |                         |                        |            |                                 | Admissions into Hospital.    | Deaths. | Invalids. | Average Constantly Sick. | Average Time to each Sick Soldier.         |                                            | Yrs. mo.                   |
| G/2 Bde. Royal Artillery      | 133                      | 183                     | 1                      | 1          | 9                               | 1375.94                      | 7.52    | 7.52      | 67.67                    | 24.70                                      | Bellary, 94; to England 12 October 1888    | 14 0                       |
| M/2 "                         | 146                      | 161                     | 2                      | 3          | 12                              | 1102.74                      | 13.70   | 20.55     | 82.19                    | 30.06                                      | Secunderabad                               | 10 2                       |
| I/3 "                         | 150                      | 234                     | 4                      | 1          | 10                              | 1560.00                      | 26.68   | 6.68      | 68.68                    | 24.00                                      | St. Thomas Mount, 104; Secunderabad, 14    | 9 0                        |
| I/4 "                         | 151                      | 235                     | —                      | 3          | 13                              | 1556.29                      | —       | 19.87     | 86.09                    | 31.51                                      | Bangalore                                  | 3 0                        |
| 1/1 " Eastern Division, R.A.  | 3                        | 10                      | 1                      | —          | —                               | 833.33                       | 333.33  | —         | —                        | —                                          | Mandalay                                   | 3 0                        |
| 4/1 " North Irish "           | 117                      | 121                     | —                      | 1          | 9                               | 1059.83                      | —       | 8.55      | 76.92                    | 28.15                                      | Fort St. George                            | 7 0                        |
| 4/1 " Lancashire "            | 115                      | 123                     | —                      | 2          | 8                               | 1089.66                      | —       | 17.39     | 69.50                    | 25.46                                      | Rangoon                                    | 9 0                        |
| 5/1 " R.A. "                  | —                        | 3                       | —                      | —          | —                               | —                            | —       | —         | —                        | —                                          | Mandalay                                   | 9 0                        |
| 7/1 " Cinque Ports Div., R.A. | 75                       | 229                     | 6                      | 1          | 10                              | 3453.33                      | 80.00   | 13.33     | 133.33                   | 48.80                                      | Secunderabad, 101; arrived 9 February 1888 | 7 2                        |
| 7/1 " London "                | 3                        | 11                      | —                      | —          | —                               | 3668.66                      | —       | —         | —                        | —                                          |                                            |                            |
| 8/1 " Cinque Ports "          | 86                       | 84                      | 2                      | 1          | 5                               | 978.74                       | 23.26   | 11.63     | 58.14                    | 21.28                                      |                                            |                            |
| Detalla, R.A.                 | 31                       | 9                       | —                      | 3          | 2                               | 290.32                       | —       | 64.51     | 64.51                    | 23.61                                      |                                            |                            |
| Total                         | 2,183                    | 2,977                   | 25                     | 45         | 164                             | 1363.72                      | 11.45   | 20.61     | 75.12                    | 27.46                                      |                                            |                            |
| ROYAL ENGINEERS.              |                          |                         |                        |            |                                 |                              |         |           |                          |                                            |                                            |                            |
| K. Company, Royal Engineers   | 41                       | 17                      | —                      | 2          | 1                               | 414.63                       | —       | 48.78     | 24.39                    | 8.92                                       | Bangalore                                  | 13 0                       |

| Corps.                              | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |         |           |                          | Average Time to Sick Soldier. | Average Duration of Sickness. | Stations occupied during the Year.                           | Years of Service in India. |
|-------------------------------------|--------------------------|-------------------------|------------------------|------------|---------------------------------|------------------------------|---------|-----------|--------------------------|-------------------------------|-------------------------------|--------------------------------------------------------------|----------------------------|
|                                     |                          |                         |                        |            |                                 | Admissions into Hos- pital.  | Deaths. | Invalids. | Average Constantly Sick. |                               |                               |                                                              |                            |
|                                     |                          |                         |                        |            |                                 |                              |         |           |                          |                               |                               |                                                              |                            |
| INFANTRY.                           |                          |                         |                        |            |                                 |                              |         |           |                          |                               |                               |                                                              |                            |
| 2nd Bn. Royal Fusiliers             | 818                      | 865                     | 8                      | 20         | 54                              | 1037.46                      | 9.78    | 24.45     | 66.01                    | 24.16                         | 22.85                         | Wellington (Detachments, Cannanore, Calicut, and Malapuram). | 15 0                       |
| 2nd Bn. Norfolk Regiment            | 122                      | 124                     | 3                      | —          | 6                               | 1016.39                      | 24.59   | —         | 49.18                    | 18.00                         | 17.71                         | Mandalay, 14                                                 | —                          |
| 2nd Bn. Somersetshire L.I.          | 913                      | 900                     | 2                      | 43         | 63                              | 985.76                       | 2.19    | 47.09     | 69.00                    | 25.25                         | 25.02                         | Belgaum                                                      | 10 9                       |
| 2nd Bn. Bedfordshire Regiment.      | 969                      | 1,400                   | 13                     | 19         | 79                              | 1444.79                      | 13.41   | 19.61     | 81.52                    | 29.81                         | 20.35                         | Secunderabad, 94; Bellary, 24                                | 12 10                      |
| 2nd Bn. Leicestershire Regiment.    | 52                       | 102                     | 3                      | —          | 4                               | 1861.54                      | 57.69   | —         | 76.92                    | 27.11                         | 14.35                         | Myingyan, &c. Arrived 4th December 1888                      | 13 0                       |
| 1st Bn. Cheshire Regiment           | 886                      | 976                     | 6                      | 14         | 73                              | 1042.73                      | 6.41    | 14.95     | 77.99                    | 28.54                         | 27.38                         | Rangoon, Dett. Port Blair                                    | 1 3                        |
| 2nd " " "                           | 586                      | 1,643                   | 22                     | 1          | 45                              | 2303.75                      | 37.54   | 1.71      | 76.79                    | 28.10                         | 10.02                         | Bhamo, Bernardnogy, Shembo, 1                                | 15 0                       |
| 2nd Bn. South Wales Borderers.      | 723                      | 869                     | 11                     | 35         | 54                              | 1189.49                      | 15.21   | 48.41     | 74.69                    | 27.33                         | 22.08                         | Thayetmyo and Wing at Toungoo                                | 8 3                        |
| 1st Bn. Duke of Cornwall L.I.       | 743                      | 1,280                   | 5                      | 1          | 63                              | 1695.82                      | 6.72    | 1.35      | 84.79                    | 31.03                         | 15.30                         | Bellary and Madras                                           | 1 0                        |
| 1st Bn. Hampshire Regiment          | 869                      | 956                     | 6                      | 13         | 58                              | 906.87                       | 6.26    | 13.56     | 60.48                    | 22.14                         | 22.20                         | Secunderabad, 10, Upper Burma, 2                             | 2 11                       |
| 2nd Bn. Royal West Surrey Regiment. | 7                        | 31                      | 8                      | —          | 1                               | 4428.57                      | 1142.86 | —         | 142.86                   | 52.28                         | 11.31                         | Myingyan, 14                                                 | 10 0                       |
| 2nd Bn. Hampshire Regiment          | 9                        | 4                       | —                      | 15         | —                               | 444.44                       | —       | 1036.67   | —                        | —                             | —                             | Secunderabad to England, 8th January 1888                    | 15 0                       |
| 2nd Bn. Oxfordshire L.I.            | 1,086                    | 1,113                   | 9                      | 35         | 81                              | 1024.86                      | 8.20    | 32.23     | 74.59                    | 27.30                         | 26.63                         | Bangalore                                                    | 2 9                        |
| 2nd Bn. Middlesex Regiment          | 707                      | 888                     | 5                      | 11         | 41                              | 1256.01                      | 7.07    | 15.56     | 57.99                    | 21.22                         | 16.90                         | Kamptee, 9. Transferred                                      | 8 3                        |
| 1st Bn. Rifle Brigade               | 559                      | 1,250                   | 42                     | 52         | 70                              | 2236.14                      | 75.14   | 93.02     | 125.22                   | 43.83                         | 20.49                         | Myingyan, 8                                                  | 8 0                        |
| 4th " " "                           | 73                       | 71                      | 3                      | —          | 2                               | 972.60                       | 41.10   | —         | 27.41                    | 10.02                         | 10.31                         | Meiktila                                                     | 15 11                      |

| Corps.                          | Average Annual Strength. | Admitted into Hospital. | Deaths in the Command. | Invalided. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |         |           |                          | Average Duration of each Case of Sickness. | Stations occupied during the Year.   | Years of Service in India. |
|---------------------------------|--------------------------|-------------------------|------------------------|------------|---------------------------------|------------------------------|---------|-----------|--------------------------|--------------------------------------------|--------------------------------------|----------------------------|
|                                 |                          |                         |                        |            |                                 | Admissions into Hospital.    | Deaths. | Invalids. | Average Constantly Sick. |                                            |                                      |                            |
| 2nd Bn. Royal Munster Fusiliers | 516                      | 1,103                   | 21                     | 2          | 51                              | 2137.60                      | 40.69   | 3.88      | 98.84                    | 36.17                                      | Mandalay, 8; left 19th November 1888 | pts. mo. 4 9               |
| Details of Infantry Regiments   | 287                      | 284                     | 5                      | 2          | 22                              | 910.51                       | 10.46   | 7.78      | 85.60                    | 31.33                                      |                                      |                            |
| Total                           | 10,035                   | 13,780                  | 172                    | 263        | 767                             | 1373.19                      | 17.14   | 26.21     | 76.43                    | 27.97                                      |                                      |                            |
| CONVALESCENT DEPT'S.            |                          |                         |                        |            |                                 |                              |         |           |                          |                                            |                                      |                            |
| Poonamallee                     | 135                      | 240                     | 4                      | 50         | 26                              | 1844.44                      | 29.63   | 370.37    | 192.59                   | 70.49                                      |                                      |                            |
| Wellington                      | 278                      | 370                     | 1                      | 5          | 25                              | 1330.94                      | 3.60    | 17.99     | 89.93                    | 32.91                                      |                                      |                            |
| Total                           | 413                      | 619                     | 5                      | 55         | 51                              | 1498.79                      | 12.11   | 133.17    | 123.49                   | 45.19                                      |                                      |                            |
| Garrison Staff and Departments. | 251                      | 100                     | 2                      | 3          | 8                               | 338.41                       | 7.97    | 11.93     | 31.87                    | 11.66                                      |                                      |                            |
| Grand Total                     | 14,073                   | 18,994                  | 220                    | 392        | 1,081                           | 1349.67                      | 15.63   | 27.85     | 76.81                    | 28.11                                      |                                      |                            |

ABSTRACT No. XLII.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the ADMISSIONS, MORTALITY, and INVALIDING in each CORPS serving in the BOMBAY COMMAND in the Year 1888.

| Corps.                      | Average Annual Strength. | Admitted into Hospital. | Died. | Invalids sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |       |            |                  | Average Time to each Sick Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year.                             | Completed Years in Command. |
|-----------------------------|--------------------------|-------------------------|-------|---------------------|---------------------------------|------------------------------|-------|------------|------------------|------------------------------------|--------------------------------------------|----------------------------------------------------------------|-----------------------------|
|                             |                          |                         |       |                     |                                 | Admitted.                    | Died. | Invalided. | Constantly Sick. |                                    |                                            |                                                                |                             |
|                             |                          |                         |       |                     |                                 |                              |       |            |                  |                                    |                                            |                                                                |                             |
| CAVALRY.                    |                          |                         |       |                     |                                 |                              |       |            |                  |                                    |                                            |                                                                |                             |
| 5th Lancers -               | 62                       | 26                      | —     | —                   | 88                              | 419.3                        | —     | —          | 14.19            | 5.19                               | 12.39                                      | Mhow, 2½ months (arrived from England)                         | —                           |
| 6th Dragoon Guards -        | 349                      | 440                     | 4     | 6                   | 21.64                           | 1335.6                       | 11.49 | 17.23      | 62.18            | 22.76                              | 18.00                                      | Mhow, 9½ months (arrived from Sialkote, and left for England). | 11                          |
| 7th Dragoon Guards -        | 23                       | 19                      | 1     | 5                   | 2.28                            | 826.1                        | 43.48 | 217.39     | 99.13            | 36.28                              | 43.92                                      | Mhow, 2 months (left for Umballa)                              | 5                           |
| Total -                     | 433                      | 485                     | 5     | 11                  | 24.80                           | 1120.1                       | 11.55 | 25.40      | 57.27            | 20.86                              | 18.71                                      |                                                                |                             |
| ROYAL ARTILLERY.            |                          |                         |       |                     |                                 |                              |       |            |                  |                                    |                                            |                                                                |                             |
| G Battery, B Brigade B.H.A. | 158                      | 205                     | 1     | 5                   | 8.35                            | 1297.5                       | 6.33  | 31.64      | 52.84            | 19.34                              | 14.91                                      | Mhow, 12 months                                                | 3                           |
| I " B " "                   | 154                      | 185                     | 1     | 9                   | 11.57                           | 1006.5                       | 6.49  | 58.44      | 76.13            | 27.49                              | 27.52                                      | Kirkee, 12 months                                              | 3                           |
| D " 1 " R.A.                | 36                       | 61                      | —     | —                   | 3.83                            | 1694.4                       | —     | —          | 106.39           | 38.93                              | 22.98                                      | Kamptee, 3 months                                              | 5                           |
| E " 1 " "                   | 144                      | 348                     | 4     | 7                   | 17.95                           | 2416.9                       | 27.78 | 48.61      | 124.65           | 45.62                              | 18.88                                      | Ahmednagar, 13 months                                          | 5                           |
| F " 1 " "                   | 147                      | 186                     | —     | 5                   | 9.72                            | 1285.3                       | —     | 20.40      | 66.12            | 24.20                              | 19.12                                      | Neemuch, 12 months                                             | 5                           |
| T " 1 " "                   | 157                      | 220                     | 1     | 2                   | 11.66                           | 1401.3                       | 6.37  | 12.74      | 73.63            | 26.95                              | 19.23                                      | Karachi, 12 months                                             | 4                           |
| D " 2 " "                   | 123                      | 166                     | —     | 3                   | 8.36                            | 1268.3                       | —     | 24.39      | 67.96            | 24.87                              | 19.61                                      | Deesa, 9 months (left for England)                             | 14                          |
| E " 2 " "                   | 105                      | 232                     | 1     | 8                   | 12.58                           | 2209.5                       | 9.32  | 76.19      | 119.81           | 43.85                              | 19.84                                      | Ahmedabad, 9½ months (left for England)                        | 14                          |
| F " 2 " "                   | 116                      | 172                     | —     | 3                   | 7.68                            | 1492.8                       | —     | 25.86      | 66.29            | 24.26                              | 16.36                                      | Hyderabad, 9½ months (left for England)                        | 14                          |
| L " 2 " "                   | 84                       | 45                      | 1     | —                   | 1.77                            | 1323.5                       | 29.41 | —          | 52.06            | 19.05                              | 14.39                                      | Kirkee, 2 months (arrived from England)                        | 1                           |

| Corps.                          | Average Annual Strength. | Admitted into Hospital. | Died. | Invalids sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |       |            |                  | Average Duration of each Case of Sickness. | Stations occupied during the Year.                                                                                 | Completed Years of Service in Command. |
|---------------------------------|--------------------------|-------------------------|-------|---------------------|---------------------------------|------------------------------|-------|------------|------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------|
|                                 |                          |                         |       |                     |                                 | Admitted.                    | Died. | Invalided. | Constantly Sick. |                                            |                                                                                                                    |                                        |
| O Battery, 2 Brigade R.A.       | 148                      | 233                     | 5     | 5                   | 9.50                            | 1274.3                       | 33.78 | 33.78      | 65.54            | 23.50                                      | Kirkee, 3½ months; Neemuch, 8½ months -                                                                            | 1                                      |
| C " 3 " "                       | 26                       | 40                      | —     | —                   | 1.70                            | 1588.5                       | —     | —          | 65.38            | 23.85                                      | Kirkee, 2 months (arrived from England) -                                                                          | 1                                      |
| F " 3 " "                       | 145                      | 174                     | 1     | 6                   | 11.10                           | 1200.0                       | 6.90  | 41.38      | 76.55            | 23.01                                      | Kirkee, 9 months; Hyderabad, 3 months -                                                                            | 1                                      |
| G " 3 " "                       | 133                      | 263                     | 3     | 13                  | 15.67                           | 1677.4                       | 22.56 | 97.74      | 117.07           | 42.00                                      | Kirkee, 8½ months; Neemuch, 3½ months -                                                                            | 3                                      |
| J " 3 " "                       | 29                       | 30                      | —     | —                   | 1.14                            | 1034.5                       | —     | —          | 30.31            | 14.39                                      | Deesa, 2 months (arrived from England) -                                                                           | 1                                      |
| J " 4 " "                       | 145                      | 253                     | —     | 4                   | 15.63                           | 1779.3                       | —     | 27.58      | 108.14           | 39.58                                      | Kirkee, 9 months; Ahmedabad, 3 months -                                                                            | 1                                      |
| R " 4 " "                       | 133                      | 167                     | 7     | 1                   | 6.63                            | 1255.6                       | 52.63 | 7.52       | 40.85            | 18.24                                      | Nasirabad, 12 months -                                                                                             | 2                                      |
| 1 Batt., 1 Brd., E.A., West.Dn. | 106                      | 126                     | 1     | 2                   | 9.16                            | 1188.7                       | 9.43  | 18.87      | 86.41            | 31.63                                      | Bombay, 12 months -                                                                                                | 3                                      |
| 4 " 1 " S.Ir. Dn.               | 121                      | 232                     | 1     | 2                   | 11.83                           | 2330.6                       | 8.26  | 16.53      | 97.63            | 35.94                                      | Karachi, 12 months -                                                                                               | 1                                      |
| 4 " 1 " Welsh Dn.               | 123                      | 117                     | 1     | 3                   | 6.88                            | 951.2                        | 8.13  | 24.39      | 55.93            | 20.47                                      | Mhow, 12 months; Kirkee, 24 days (arrived from Secunderabad). Arrived at Bombay from Madras on 28th December 1888. | 9                                      |
| 4 " 1 " N.Ir. Dn.               | —                        | —                       | —     | —                   | —                               | —                            | —     | —          | —                | —                                          | Aden, 10 months (left for England) -                                                                               | —                                      |
| 6 " 1 " Lanc. Dn.               | 89                       | 127                     | 1     | 4                   | 6.49                            | 1427.0                       | 11.23 | 44.94      | 72.92            | 26.69                                      | Bombay, 2 months (arrived from Rawal Pindi) -                                                                      | 13                                     |
| 5 " 1 " South Dn.               | 20                       | 68                      | 1     | —                   | 2.37                            | 3400.0                       | 50.00 | —          | 128.50           | 47.03                                      | Bombay, 10 months; Aden, 2 months (arrived from Burma).                                                            | 6                                      |
| 6 " 1 " South Dn.               | 120                      | 190                     | 1     | 6                   | 8.85                            | 1583.3                       | 8.33  | 50.00      | 73.75            | 26.95                                      | Bombay, 9 months; Aden, 2 months; and Kirkee, 1 month.                                                             | 13                                     |
| 7 " 1 " South Dn.               | 100                      | 170                     | —     | 3                   | 8.63                            | 1700.0                       | —     | 30.00      | 86.30            | 31.63                                      | Aden, 10 months (left for England) -                                                                               | 13                                     |
| 8 " 1 " Lon. Dn.                | 90                       | 113                     | 2     | 4                   | 5.50                            | 1255.5                       | 20.22 | 44.44      | 61.11            | 22.37                                      | Mhow, 1 month (left for Secunderabad) -                                                                            | 7                                      |
| 8 " 1 " C.P. Dn.                | 9                        | 4                       | —     | —                   | .57                             | 444.4                        | —     | —          | 63.53            | 23.18                                      |                                                                                                                    |                                        |
| Total                           | 2711                     | 4,142                   | 33    | 93                  | 215.20                          | 1527.8                       | 12.17 | 34.30      | 79.38            | 29.03                                      |                                                                                                                    |                                        |

| Corps.                       | Average Annual Strength. | Admitted into Hospital. | Died. | Invalids sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |       |            |                  | Average Time to each Sick Soldier. | Average Duration of each Case of Sickness. | Stations occupied during the Year.                    | Completed Years in Service in Command. |
|------------------------------|--------------------------|-------------------------|-------|---------------------|---------------------------------|------------------------------|-------|------------|------------------|------------------------------------|--------------------------------------------|-------------------------------------------------------|----------------------------------------|
|                              |                          |                         |       |                     |                                 | Admitted.                    | Died. | Invalided. | Constantly Sick. |                                    |                                            |                                                       |                                        |
| Royal Engineers              | 16                       | 6                       | 1     | 1                   | 24                              | 375.0                        | —     | 62.0       | 15.00            | 5.40                               | 14.61                                      |                                                       |                                        |
| <b>INFANTRY.</b>             |                          |                         |       |                     |                                 |                              |       |            |                  |                                    |                                            |                                                       |                                        |
| 2nd Royal Lanc. Regiment     | 788                      | 1,633                   | 8     | 6                   | 59.24                           | 2072.3                       | 10.15 | 7.61       | 75.18            | 17.00                              | 8.20                                       | Karachi, 9½ months (arrived from Quetta)              | 8                                      |
| 1st Royal Fusiliers          | 879                      | 785                     | 12    | 4                   | 57.93                           | 893.1                        | 13.65 | 4.55       | 65.90            | 24.12                              | 27.09                                      | Poona, 11½ months (arrived from Egypt)                | 1                                      |
| 2nd East Yorkshire Regiment  | 501                      | 680                     | 3     | 9                   | 52.90                           | 1377.2                       | 5.99  | 17.96      | 45.89            | 16.79                              | 12.19                                      | Bombay, 2 months; Aden, 8½ months (left for England). | 14                                     |
| 2nd Lancashire Fusiliers     | 884                      | 1,551                   | 11    | 31                  | 70.19                           | 1754.5                       | 12.44 | 85.07      | 79.40            | 29.06                              | 16.51                                      | Ahmednagar, 11 months; Nasirabad, 1 month             | 7                                      |
| 1st West Riding Regiment     | 98                       | 137                     | 1     | —                   | 6.14                            | 1397.9                       | 10.20 | —          | 62.65            | 22.98                              | 16.40                                      | Aden, 1½ months (arrived from Mian Mir)               | 13                                     |
| 1st Loyal N. Lanc. Regiment  | 859                      | 1,525                   | 5     | 27                  | 70.76                           | 1775.3                       | 5.82  | 31.43      | 82.37            | 30.15                              | 16.70                                      | Mhow, 12 months                                       | 5                                      |
| 2nd Gloucestershire Regiment | 761                      | 960                     | 10    | 22                  | 46.87                           | 1261.5                       | 13.14 | 28.91      | 65.53            | 23.98                              | 19.01                                      | Bombay, 10½ months; Poona, 1½ months                  | 8                                      |
| 2nd Middlesex Regiment       | 231                      | 310                     | 1     | —                   | 16.97                           | 1342.0                       | 4.33  | —          | 73.46            | 26.89                              | 20.03                                      | Kamptec, 3 months                                     | 8                                      |
| 2nd North Stafford Regiment  | 93                       | 72                      | 1     | 5                   | 8.54                            | 774.2                        | 10.75 | 53.76      | 38.06            | 13.93                              | 17.99                                      | Aden, 2 months (left for England)                     | 8                                      |
| 2nd Royal Dublin Fusiliers   | 873                      | 1,007                   | 16    | 17                  | 61.51                           | 1153.5                       | 18.33 | 19.47      | 70.46            | 25.70                              | 22.86                                      | Nasirabad, 12 months                                  | 3                                      |
| 2nd Yorkshire Light Infantry | 206                      | 169                     | 2     | 9                   | 10.96                           | 820.4                        | 9.71  | 43.69      | 52.61            | 19.37                              | 23.60                                      | Karachi, 2½ months (left for Quetta)                  | 2                                      |
| 2nd Durham Light Infantry    | 925                      | 1,294                   | 13    | 23                  | 66.34                           | 1368.9                       | 14.05 | 24.86      | 74.96            | 27.44                              | 19.61                                      | Poona, 12 months                                      | 2                                      |
| Total                        | 7,968                    | 10,133                  | 83    | 153                 | 496.38                          | 1427.6                       | 11.69 | 21.55      | 70.35            | 25.75                              | 18.03                                      |                                                       |                                        |

| Corps.                               | Average Annual Strength. | Admitted into Hospital. | Died. | Invalids sent Home. | Average Number Constantly Sick. | Ratio per 1,000 of Strength. |       |            |                  | Average Duration of each Case of Sickness. | Stations occupied during the Year. |   | Completed Years of Service in Command. |
|--------------------------------------|--------------------------|-------------------------|-------|---------------------|---------------------------------|------------------------------|-------|------------|------------------|--------------------------------------------|------------------------------------|---|----------------------------------------|
|                                      |                          |                         |       |                     |                                 | Admitted.                    | Died. | Invalided. | Constantly Sick. |                                            |                                    |   |                                        |
| <b>Depôts, &amp;c.</b>               |                          |                         |       |                     |                                 |                              |       |            |                  |                                            |                                    |   |                                        |
| Colaba Depôt                         | 87                       | 130                     | 2     | 11                  | 13.75                           | 1484.3                       | 23.00 | 129.44     | 158.05           | 173.82                                     | Bombay, 12 months                  | . | .                                      |
| Deolali Depôt                        | 629                      | 614                     | 11    | 3                   | 17.46                           | 976.1                        | 17.49 | 4.77       | 27.06            | 10.48                                      | Deolali, 12 months                 | . | .                                      |
| Convalescents                        | 73                       | 133                     | —     | 1                   | 7.00                            | 1822.0                       | —     | 13.70      | 95.89            | 35.09                                      | Mount Abu, 12 months               | . | .                                      |
| "                                    | 135                      | 233                     | —     | 11                  | 13.15                           | 1725.9                       | —     | 81.48      | 97.41            | 35.65                                      | Purandhar, 12 months               | . | .                                      |
| "                                    | 40                       | 63                      | —     | —                   | 1.61                            | 1285.7                       | —     | —          | 32.86            | 12.02                                      | Khandalla                          | . | .                                      |
| "                                    | 26                       | 39                      | —     | —                   | 2.18                            | 1500.0                       | —     | —          | 83.85            | 30.60                                      | Tarasgarh                          | . | .                                      |
| Garrison Staff and Depart-<br>ments. | 127                      | 45                      | 1     | 5                   | 2.47                            | 354.3                        | 7.87  | 39.37      | 19.45            | 7.12                                       |                                    | . | .                                      |
| Various Corps                        | 170                      | 170                     | 1     | 7                   | 14.56                           | 949.7                        | 5.59  | 39.11      | 81.83            | 29.77                                      |                                    | . | .                                      |
| Troops on the March, &c.             | 263                      | 134                     | 2     | —                   | 2.29                            | 569.5                        | 7.60  | —          | 8.71             | 3.19                                       |                                    | . | .                                      |
| Military Prison                      | 97                       | 25                      | 1     | —                   | 2.03                            | 257.7                        | 10.31 | —          | 20.93            | 75.58                                      | Poona                              | . | .                                      |
| Rest Camp                            | 2                        | 2                       | —     | —                   | .02                             | 1000.0                       | —     | —          | 10.00            | 3.61                                       | Khandwa                            | . | .                                      |
| Total                                | 1,667                    | 1,588                   | 18    | 38                  | 76.52                           | 882.6                        | 10.80 | 22.79      | 45.90            | 16.80                                      |                                    | . | .                                      |
| Grand Total                          | 11,925                   | 16,334                  | 139   | 295                 | 816.14                          | 1371.4                       | 11.65 | 24.82      | 68.43            | 25.05                                      |                                    | . | .                                      |



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## APPENDICES.

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## APPENDIX No. I.

REPORT ON THE PROGRESS OF HYGIENE FOR THE  
YEAR 1889.

By Surgeon-Major J. LANE NOTTER, B.A., M.D., M.Ch., Dublin, Professor of  
Military Hygiene in the Army Medical School, Netley.

The year 1889 has seen much activity in all sanitary matters. This has chiefly arisen in this country from the action of various Acts which have been passed by Parliament and abroad from the interest taken in the Sanitary Congress which was held in Paris in connexion with the Exhibition there.

The diffusion of knowledge on this subject, and of the opinions of those who can speak with authority, will, it is hoped, have a beneficial effect.

The Exhibition showed how much the French nation have interested themselves in sanitary matters and the progress this science has made in that country during recent years.

Messrs. Doulton & Co.'s exhibit was well worth a visit; they were entrusted with nearly all the lavatory arrangements in the Exhibition.

As regards filters, a large space was given to this class, and this was advisable, as all the water supplied to Paris for drinking purposes requires to be carefully filtered before use. It may be well to mention that the water supply of Paris is taken from the Rivers Ourcq, Vanne, and Seine. Each *arrondissement* of Paris is supplied in turn with Seine water for about 14 days; it is very impure, and notice is given to the inhabitants so as to be careful to purify it. The proper filtration of this water is very necessary.

I was particularly interested in M. Chamberland's new filter, and succeeded in obtaining one, which I have experimented on in our laboratory at Netley, and which will be referred to again. This filter is said to be the only one which arrests germs, and although its action is slow the result, so far as the physical characters of the water are a guide, was most favourable. The contrast between the Seine water before filtration and after it had passed through the filter was very remarkable, and the action of this filter seemed to be all that one could wish; the mechanism is simple, the only drawback is that it requires pressure in order to force the water through the tubes, and the comparatively long time this takes.

A disinfecting machine, exhibited by M.M. Geneste, Herscher & Co., is a decided improvement on many used in this country; it is specially designed to overcome the difficulty of destroying the infective particles in blankets, bedding, &c. The same firm showed a large number of drawings having reference to the ventilation and warming of public buildings.

The Cellular Clothing Company exhibited clothing made of silk, wool, &c. It is woven so that air can pass freely through it; not only can the external air pass in, but the exhalations from the body can readily escape. The materials are excellent and the clothing exceedingly well made.

In the section set apart for the exhibit of sewers, and methods of drainage, not only were the recent and improved principles shown, but the old plans were illustrated by drawings. The latter plans are gradually being replaced by new and improved methods, but many houses in Paris still allow the drains to empty their contents into cesspits. It is really wonderful that Paris has been so healthy under such a system of drainage.

The absence of any explanation attached to the exhibits was a great drawback, and where time was limited necessitated many points being overlooked, which, doubtless, were of great practical value.

## II.—*Legislation.*

The most important enactments on the subject of public health, passed by Parliament during the year, are—

1. The Infectious Diseases Notification Act.—By this Act the notification of infectious diseases is made compulsory in London, and in the district of every sanitary authority who choose to adopt the Act voluntarily.

It especially deals with (1) the exposure of infected persons or things; (2) letting without disinfection houses in which infected persons have lodged; (3) disinfection of houses; (4) conveyance of infected persons; and (5) removal of infectious cases. The notification is dual—(a) by the head of the family or nearest relative or person in charge of or in attendance on the patient; and (b) by the medical practitioner who is attending on, or who is called to visit, the patient. Both have to send a notice on a prescribed form to the medical officer of health. The following are the infectious diseases to which the Act applies: Small-pox, cholera, diphtheria, membranous croup, erysipelas, scarlet fever, typhus, typhoid, enteric, relapsing, continued or puerperal fever, and also any infectious disease to which the Act has been or may be applied by the local authority.

2. Local Government (Scotland) Act.—This is similar to the Local Government Act, passed for England last year. Under it the county councils *must* appoint a medical officer of health. In England this power is a permissive one.

3. Sale of Horseflesh Regulation Act.—This Act provides that horseflesh shall not be sold for human food elsewhere than in a shop or stall, which is conspicuously labelled as a place where horseflesh is sold. It was passed through Parliament in consequence of the fact that in many parts of the country horseflesh is sold for human food as ordinary beef or ox flesh.

4. Lunacy Acts Amendment Act.—By this Act, after May 1st, 1890, no private patients shall be confined as insane on the certificate of two doctors, but an order from a judge or magistrate shall be required.

5. The Cotton Cloth Factories Act.—This Act provides for the examination of the ventilation, temperature, and humidity of these factories. The inspector under this Act can also require mechanical or other means to be provided to prevent the inhalation of dust by the workpeople.

## III.—*Work of Societies, &c.*

1. The Sanitary Institute of Great Britain held its Congress this year (1889) at Worcester. Mr. G. W. Hastings, M.P., presided, and delivered the introductory address. He urged the necessity for the proper disposal of sewage, and was strongly in favour of placing the liquid sewage directly on the land. He further showed that inventors in the various manufactories were constantly endeavouring not only to improve productions, but also to improve health. Many papers of great interest were read, and the meetings were exceedingly well attended.

2. The British Medical Association met at Leeds. The public health section was held under the presidency of E. Ballard, M.D., F.R.S., Medical Inspector, Local Government Board, who took for the subject of his address, "Medical Officers of Health: their Training, and the Conditions on which they hold Office." Mr. H. Franklin Parsons delivered an excellent address on "Disinfection and Isolation, with special reference to the control of Epidemics."

3. The International Hygienic Congress met at Paris. It was divided into eight sections, and in each section printed reports were distributed to the members to serve as a basis for discussion.

The chief subjects under discussion were "The Treatment and Removal of Domestic Refuse," "The Notification of Infectious Diseases," "The Housing of the Poorer Classes," &c.

With reference to the filtration of potable water, M. Maignen read an interesting paper on this subject, and made a number of experiments with his "Filtre Rapide," showing how powerful it is to arrest microbes. He considered this was proved by the inoculation of guinea-pigs and rabbits, which died when inoculated with water before filtration, but survived when inoculated with filtered water. The microbe used was that of anthrax.

#### IV.—*State Medicine, &c.*

The Local Government Act of last year (1888) has produced good effect in attracting attention to this subject, and the General Medical Council has issued recommendations to the various licensing bodies who give degrees or diplomas in sanitary science. The examination will in future be conducted on a more uniform principle, and if these recommendations are carried out a highly trained and efficient sanitary service will be the result.

The great and increasing importance of the duties devolving upon local surveyors and inspectors of nuisances in relation to the various Acts having reference to public health has induced the Council of the Sanitary Institute to continue their examinations in this important branch, and the value of the certificates they give is each year becoming more appreciated by local boards and public bodies.

The Worshipful Company of Plumbers have also undertaken the useful work of examination and registration of plumbers, which has the effect of enabling the public to secure qualified tradesmen and to raise the standing and efficiency of this class. The Technical Education Act, which was passed this year (1889), will enable local public bodies to give free instruction in the scientific principles of plumbing should they be willing to adopt the Act.

#### V.—*Literature.*

1. "Hygiene and Public Health," by Louis C. Parkes, M.D. (Lewis's Practical Series). Dr. Louis Parkes has given in a condensed and very readable form a resumé of our knowledge on the essentials of hygiene, and his work has the advantage of being concise and up to date. The chapters on the collection, removal, and disposal of excreta and other refuse are extremely well written. The etiology and prevention of disease is fully discussed. The last chapter on statistics is very clear, and the chief points are illustrated by examples.

2. "Examination of Water for Sanitary and Technical Purposes," by H. Leffman, M.D., Ph.D., and W. Beam, M.A., Philadelphia.

This is an extremely useful and in many ways an original work. It contains many details of importance.

The soap method for determining the hardness of water, almost universally used in this country, is rejected, as not being accurate, and Hehner's method substituted for it. The water is titrated with a standard sulphuric acid solution, lacmeoid being used as an indicator, which is said to be unaffected by carbon dioxide.

It may be noted that a series of experiments made by Waller, of New York, show that the soap test is apparently unreliable for hard waters especially, and that even with waters comparatively soft the results for permanent hardness are still unsatisfactory. (*Analyst*, Vol. XIV., page 108.)

3. Jahresbericht über die Leistungen und Fortschritte auf dem Gebiete des Militär Sanitätswesens. Von Dr. W. Roth, General-Arzt.

This is the annual report compiled by Dr. Roth, with the assistance of an able staff. The subject of hygiene is divided into two parts. General hygiene and special hygiene. Under the latter, questions are discussed relating to hygienic topography, habitations, including barracks, tents, camps, cantonments, transportable barracks, and officers' tents. There is also a report on tents and barracks at Krasnoje-Soloe (Russia), and the diseases occurring there.

The daily field ration of the German army has been changed ; it is given as follows :—

|                                                 |   |   |   |   |   |              |
|-------------------------------------------------|---|---|---|---|---|--------------|
| Bread                                           | - | - | - | - | - | 750 grammes. |
| Fresh or raw salt meat                          | - | - | - | - | - | 375 "        |
| or Smoked beef, mutton, ham, bacon, or sausage- | - | - | - | - | - | 200 "        |
| Rice or ground barley                           | - | - | - | - | - | 125 "        |
| or Peas, beans, or flour                        | - | - | - | - | - | 250 "        |
| or Potatoes                                     | - | - | - | - | - | 1,500 "      |
| Salt                                            | - | - | - | - | - | 25 "         |
| Roasted coffee                                  | - | - | - | - | - | 25 "         |
| or Raw coffee                                   | - | - | - | - | - | 30 "         |

For horses the heavy war ration is :—

|                  |   |   |   |   |   |                |
|------------------|---|---|---|---|---|----------------|
| Oats             | - | - | - | - | - | 6,000 grammes. |
| Hay              | - | - | - | - | - | 1,500 "        |
| Straw for fodder | - | - | - | - | - | 1,500 "        |

Viry states that the following changes have taken place in the dietary of the French soldier. The meat ration has been raised from 250 grammes to 300 grammes ; also there is more variation in the diet. There is a decrease in the bread ration. By a recent order a medical officer is placed on the " Board of Rations."

Viry regrets that the feeding of the Austrian soldier, by the budget of 1889, has not been improved. This report also states that the Italian troops in Africa receive, since April 1st, 1888, the following rations :—

A. Daily :—

|        |   |   |   |   |   |                      |
|--------|---|---|---|---|---|----------------------|
| Bread  | - | - | - | - | - | 800 grammes.         |
| Meat   | - | - | - | - | - | 400 "                |
| Cheese | - | - | - | - | - | 10 "                 |
| Salt   | - | - | - | - | - | 15 "                 |
| Coffee | - | - | - | - | - | 15 "                 |
| Sugar  | - | - | - | - | - | 22 "                 |
| Wine   | - | - | - | - | - | $\frac{1}{2}$ litre. |

B. On stated days :—

|                      |   |   |   |   |      |                                      |
|----------------------|---|---|---|---|------|--------------------------------------|
| Best olive oil       | - | - | - | - | -    | 6 grammes, 4 times a week.           |
| Bacon                | - | - | - | - | 15 " | 3 " "                                |
| Onions               | - | - | - | - | 50 " | 3 " "                                |
| Potatoes or beans    | - | - | - | - | 50 " | 2 " "                                |
| Preserved vegetables | - | - | - | - | 50 " | 2 " "                                |
| Preserved tomatoes   | - | - | - | - | 10 " | 2 " "                                |
| Rum or anise brandy  | - | - | - | - | -    | $\frac{1}{2}$ litre every other day. |

Schoefer, of Vienna, gives a paper on water filtration. He states that none of the known filters are satisfactory as they do not remove microbes, but only diminish their number. The Berlin waterworks use sand.

The much praised filters of carbon, carfural, and cellulose are decidedly unsatisfactory.

Better results are obtained, he states, from the Chamberland filter (calcined porcelain clay), and from those of Engineer Breyer, of Vienna. These latter are made of asbestos as a microbe-proof membrane. Both are equally bad in a qualitative sense, but the latter yield less quantitatively, may be easily cleaned, and are cheaper. M. Maignen's filters, tried at Kronstadt, are quite unable to stop microbes or typhoid bacilli ; they yield a water without taste or smell, but soon cease to do so, like ordinary filters.

Kowalski, of Vienna, finds 76 different species of bacteria in the water of Vienna and its neighbourhood. He recommends cultivating them on covered glass plates, as an improvement of the method recommended by Koch in 1881.

Hiller describes a useful method of rendering porous materials (as cloaks, military clothing, &c.) waterproof by dipping them alternately in a solution of sulphate or acetate of alumina and of soap.

4. "The Elements of Vital Statistics," by Arthur Newsholme, M.D.

This work has supplied a long felt want. It is divided into two parts, Registration of births, deaths, sickness, and marriages, what Dr. News-holme terms "the sources of information," and "the information to be derived from these sources." It is a work of special value to sanitary medical officers; and brings within easy compass all points necessary for an accurate study of this important subject.

5. "Food in Health and Disease," by I. Burney Yeo, M.D. (Cassell and Co.'s series.)

This book supplies, in a very compact form, all that is necessary for the ordinary student to know on this subject. It is clearly written, and enters fully into the purposes of food, and the nutritive value of various articles of diet. The chapter on soldiers' dietary is very complete, and includes Colonel Burnett's memorandum on this subject, which is embodied in the report on soldiers' dietary, presented this year to Parliament. There is an immense amount of information within a very small compass.

6. "Nouveaux Eléments d'Hygiène," by Jules Arnould, Second Edition, 1889.

This is a large volume of 1,400 pages closely printed, and forms probably the most complete and comprehensive text-book on hygiene that at present exists. It is divided into three parts, the first of which, on general hygiene, occupies the bulk of the work. The subject of soil is dealt with in an especially full manner.

A special chapter is devoted to the considerations of micro-organisms, and throughout the book their relations with soil, water, air, &c. are treated at greater length and more comprehensively than in any other treatise on hygiene.

The second part, on special hygiene, deals with the hygiene of infancy, of schools, of cities, the army and navy, prisons, and hospitals.

The third part gives an account of the public health service in the various countries of Europe and in the United States of America. The work exhibits in a marked degree the clearness and methodical order characteristic of French scientific writings, and is a most valuable contribution to hygiene.

#### *Special Points of Hygiene.*

1. A table of analyses of samples of water sent to the laboratory at Netley is appended. The plan followed is much the same as that of last year's report.

I have not found it possible as yet to obtain any definite indications from cultivation experiments, but they have been continued with a hope that by accumulating facts we may possibly be able to arrive at some practical conclusion.

In all 67 samples were examined, and 60 were subjected to cultivation experiments. Of the 67 samples the following is the classification:—

|                                                                                        |   |   |   |   |   |    |
|----------------------------------------------------------------------------------------|---|---|---|---|---|----|
| "Fit for use"                                                                          | - | - | - | - | - | 24 |
| "Usable but requiring filtration before use"                                           | - | - | - | - | - | 10 |
| "Unfit for use on account of organic impurity and of excessive hardness and chlorides" | - | - | - | - | - | 33 |
| Total                                                                                  | - | - | - | - | - | 67 |

The following table gives the means of the analysis (in parts per 100,000).

*Table of Drinking Water according to Purity.*

| No. | Class of Waters.                                                                | Chlorine. | Oxygen required for organic matter. | Ammonia. |             | Nitric Acid. | Hardness. |        |
|-----|---------------------------------------------------------------------------------|-----------|-------------------------------------|----------|-------------|--------------|-----------|--------|
|     |                                                                                 |           |                                     | Free.    | Albuminoid. |              | Total.    | Fixed. |
| 24  | "Fit for use"                                                                   | 4.46      | 0.0432                              | 0.0013   | 0.0087      | 1.2036       | 14.9      | 6.0    |
| 10  | "Usable but require filtration"                                                 | 6.15      | 0.0600                              | 0.0016   | 0.0091      | 1.7487       | 9.3       | 5.5    |
| 29  | "Unfit on account of organic impurity and of excessive hardness and chlorides." | 10.70     | 0.1848                              | 0.1655   | 0.0292      | 4.8931       | 17.4      | 10.6   |

In the first group.—“Fit for use,” the chlorine and hardness are high, the cause being the large amount of these present in the Colchester and Isle of Wight waters.

In the second group.—“Usable but requiring filtration,” the chlorine is largely in excess. This is owing to samples received from St. Helena, Gosport, and Portland, and is due to the proximity of the wells and tanks at these stations to the sea.

In comparison with last year's tables there are some differences. In the first group the chlorine is slightly in excess, 4·46 against 3·98; and also the hardness, 14·9 against 12·7.

In the second group, the chlorine approximates very closely last year's, 6·15 against 6·0, but the hardness is only one half, 9·3 against 18·1. This is owing to the number of samples received last year from Ireland, the great majority of which were exceedingly hard.

| No. of Sample. | Source.                                                                                | Physical Characters.                                                     | Microscopic Characters of the Sediment.                                                                      | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                  |                                                                                                                                                                                        |
|----------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                        |                                                                          |                                                                                                              | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                           |                                                                                                                                                                                        |
|                |                                                                                        |                                                                          |                                                                                                              |                                             |                                     |               |                     |              | Total.    |                                           |                                                           | Fixed.                                                                                                                                                                                 |
| 1              | Colchester.—From cistern supplied by waterworks, G.O.C.E. Division quarters.           | Clear, not turbid; very small sediment; good lustre and taste; no smell. | Sediment very small, consisting of a little vegetable debris and a few minute infusoria.                     | 27.50                                       | 0.038                               | 0.0028        | 0.0026              | 0.7960       | 12.5      | 3.0                                       | Not examined                                              | The chlorine is very large and also the soda solids. This is probably due to the source, namely, from chalk under London clay. Organic impurity very small. Fit for drinking purposes. |
| 2              | Colchester.—Taken from barrel at caretakers, Middlewich Rifle Range, from Birch Brook. | Yellow, not turbid; some sediment; dull lustre; taste good; no smell.    | Sediment contains numerous diatoms, dyed wool, and cotton fibre, and numerous small infusoria.               | 2.70                                        | 0.134                               | 0.0151        | 0.0224              | 2.4387       | 7.5       | 7.5                                       | Not examined                                              | Unfit for drinking purposes. N.B.—Is the barrel clean from which the sample is taken, and protected from accidental contamination?                                                     |
| 3              | Hythe.—School of Musketry. From tank before filtration.                                | Yellow, not turbid; small sediment; good lustre and taste; no smell.     | Dyed woollen fibre; cotton fibre; epidermis of grass; sand; mineral grit; minute infusoria; spores of fungi. | 3.70                                        | 0.044                               | 0.0073        | 0.0086              | 2.0156       | 21.5      | 6.5                                       | Numerous colonies, and some liquefaction after five days. | The microscopic appearances tend to show that dust gains access to this supply. Chemically the water is good, and fit for drinking purposes.                                           |



| No. of Sample. | Source.                                                      | Physical Characters.                                                        | Microscopic Characters of the Sediment.                                                         | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                           |                                                                                                                                    |
|----------------|--------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                              |                                                                             |                                                                                                 | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                    |                                                                                                                                    |
|                |                                                              |                                                                             |                                                                                                 |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                    | Fixed.                                                                                                                             |
| 4              | Hythe.—School of Musketry. Taken from tap in officers' mess. | Yellow, not turbid; small sediment; good lustre and taste; no smell.        | Mineral grit; some chips of deal fibre; a few minute infusoria.                                 | 3.70                                        | 0.040                               | 0.0044        | 0.0088              | 1.9533       | 21.5      | 8.0                                       | A few colonies, and some liquefaction after seven days.                                            | This water is good and fit for drinking, but the microscopic examination shows that dust has access to the tank.                   |
| 5              | Weedon. — From well, 97 feet deep.                           | Yellow, not turbid; small sediment; good lustre; palatable taste; no smell. | A few particles of sand; cotton fibre; no animal life.                                          | 1.60                                        | 0.033                               | None          | 0.0046              | 2.0113       | 23.0      | 11.5                                      | Some liquefaction after seven days.                                                                | This water is rather hard. It is fit for drinking purposes.                                                                        |
| 6              | Lydd.—No. 1 well, East Side.                                 | Yellow, not turbid; small sediment; dull lustre; flat taste; no smell.      | Decaying vegetable matter; a little sand; some mycelium growth; and a few infusoria deal fibre. | 4.10                                        | 0.230                               | 0.0080        | 0.0440              | 4.3501       | 14.0      | 11.0                                      | Numerous colonies, some liquefying after four days; liquefaction almost complete after seven days. | Unfit. The well probably requires cleaning out.                                                                                    |
| 7              | Lydd.—No. 2 well, East Side.                                 | Yellow, not turbid; small sediment; palatable; no smell.                    | Some mycelium growth; several infusoria and chips of deal.                                      | 4.50                                        | 0.240                               | 0.0024        | 0.0352              | 4.2333       | 13.5      | 11.0                                      | Liquefaction almost complete after seven days.                                                     | Unfit for drinking purposes.                                                                                                       |
| 8              | Curragh Camp.—New well. Horse Park. Depth 65 feet.           | Clear, not much sediment; good lustre and taste; no smell.                  | Particles of sand; vegetable debris; dyed fibres of wool; cotton; mycelium and spores of fungi. | 1.70                                        | 0.033                               | None          | 0.0023              | 2.1003       | 30.0      | 8.0                                       | No growth on fifth day; only two colonies on eighth day; extensive liquefaction on twelfth day.    | Microscopic examination shows that the water is exposed to surface impurities, which should be guarded against. It is fit for use. |

| No. of Sample. | Source.                                                                                   | Physical Characters.                                                        | Microscopic Characters of the Sediment.                                                                                | Quantitative Analyses in parts per 100,000. |                                     |               |                      |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                  |                                                                                                                                                          |
|----------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|----------------------|--------------|-----------|-------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                           |                                                                             |                                                                                                                        | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Alb. minoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                           |                                                                                                                                                          |
|                |                                                                                           |                                                                             |                                                                                                                        |                                             |                                     |               |                      |              | Total.    |                                           |                                                                           | Fixed.                                                                                                                                                   |
| 9              | Weedon. — From centre of Fawley Brook, 60 yards above where sewage enters the stream.     | Slightly yellow, turbid; large sediment; dull lustre; fair taste; no smell. | Mineral grit; a little vegetable fibre; some amorphous matter; and a few minute infusoria.                             | 1.50                                        | 0.040                               | 0.0027        | 0.0069               | 0.8253       | 14.0      | 7.5                                       | After six days a few colonies; after 13 days very slight liquefaction.    | This water appears to be free from sewage contamination.                                                                                                 |
| 10             | Weedon. — From South Bank of Fawley Brook, 60 yards above where sewage enters the brook.  | Yellow, turbid; large sediment; dull lustre; palatable; no smell.           | Mineral grit and amorphous matter; a few diatoms; stylonichia; and a few minute infusoria; cotton fibre.               | 1.50                                        | 0.040                               | 0.0027        | 0.0022               | 0.8081       | 14.0      | 7.5                                       | After six days a few colonies, and one liquefying colony very small.      | Same as sample No. 9.                                                                                                                                    |
| 11             | Weedon. — From North Bank of Fawley Brook, 60 yards above where sewage enters the stream. | Same as No. 10                                                              | Vegetable debris and amorphous matter; diatoms; paramecium and a few minute infusoria; a few cotton fibres.            | 1.50                                        | 0.040                               | 0.0020        | 0.0060               | 0.8030       | 14.5      | 7.5                                       | After seven days a few moulds, and very slight bacterial growth.          | Same as sample No. 10.                                                                                                                                   |
| 12             | Isle of Wight.— Golden Hill Fort. From well inside the fort, 95 feet deep.                | Colourless and clear; small sediment; lustre and taste good; no smell.      | Mineral grit and amorphous matter; crystals of carbonate of lime; no animal or vegetable life; some mycetium of fungi. | 12.40                                       | 0.048                               | None          | 0.0033               | 0.2334       | 25.0      | 9.0                                       | After three days some moulds, and complete liquefaction after seven days. | This water contains an excess of chlorine, probably due to infiltration of sea water. It has very little organic impurity, and may be used for drinking. |

| No. of Sample. | Source.                                                                     | Physical Characters.                                                                 | Microscopic Characters of the Sediment.                                                                                          | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                                   |                                                                                                                                                                                                                                          |
|----------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                             |                                                                                      |                                                                                                                                  | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                            |                                                                                                                                                                                                                                          |
|                |                                                                             |                                                                                      |                                                                                                                                  |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                            | Fixed.                                                                                                                                                                                                                                   |
| 13             | Iale of Wight.—Golden Hill Fort. From well, 75 feet deep, outside the fort. | Slightly yellow, turbid; large sediment; dull lustre; flat taste; no smell.          | Particles of finely divided clay; no trace of animal or vegetable life.                                                          | 6.8000                                      | 0.168                               | None          | 0.0201              | 0.1907       | 25.0      | 8.5                                       | After seven days a few dots on the plate; after ten days no liquefaction.                                  | This water contains an excess of organic matter, probably of vegetable origin. The well requires cleaning out.                                                                                                                           |
| 14             | Newhaven Fort.—Well on W.D. land, 35 feet deep.                             | Colourless, clear; small sediment; good lustre; taste palatable; no smell.           | A little vegetable debris and a few minute infusoria.                                                                            | 14.30                                       | 0.048                               | None          | 0.0047              | 0.0230       | 16.5      | 7.5                                       | Very little growth; a few small whitish non-liquefying colonies on seventh day; some moulds brown centres. | This water contains an excess of chlorides. The organic matter is very small. If the situation of the well is such that the excess of chlorides can be traced to percolation from the sea, this water may be used for drinking purposes. |
| 15             | Bury, Lancashire.—Bury water-works, direct from tap.                        | Slightly yellow, not turbid; small sediment; good lustre; palatable taste; no smell. | A large number of minute infusoria; mycelium of fungi; unicellular, algae, and some vegetable debris; a red and blue silk fibre. | 1.20                                        | 0.060                               | 0.0032        | 0.0060              | 1.1480       | 3.5       | 3.0                                       | Numerous colonies, a few liquefying, after three days; considerable liquefaction after five days.          | Fit for use. The access of surface impurities should be guarded against.                                                                                                                                                                 |

| No. of Sample. | Source.                                             | Physical Characters.                                                               | Microscopic Characters of the Sediment.                                                                                                                      | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c.                                 | Remarks.                                                                                                                                                                                                                               |
|----------------|-----------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                     |                                                                                    |                                                                                                                                                              | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                                                           |                                                                                                                                                                                                                                        |
|                |                                                     |                                                                                    |                                                                                                                                                              |                                             |                                     |               |                     |              | Total.    |                                                                           |                                                                                                                                                                                                                                        |
| 16             | Madely. — Salop well at County Court, 34 feet deep. | Clear and colourless; very small sediment; brackish taste; no smell.               | Oscillatorian filaments; epidermis of grass spores; cotton and linen fibre; dyes, wool, pine fibre; solitary vorticella; actinophrys solitary trichia fibra. | 50.00                                       | 0.036                               | None          | 0.0046              | 36.7618      | 47.5      | A few colonies, one liquefying, after six days.                           | This water is unfit for drinking purposes on account of the excess of mineral matters, and the large amount of nitric acid.                                                                                                            |
| 17             | Inverness. — Depth of well 8 feet. "M. of O. 1."    | Colourless and clear; small sediment; good lustre and taste; no smell.             | Masses of mycelium of fungi; dyed woollen fibre; cotton fibre, deal amorphous matter, and bacteria.                                                          | 1.70                                        | 0.048                               | None          | 0.0052              | 2.0423       | 5.0       | Some liquefaction after three days; nearly all liquefied after five days. | This water is chemically fit for drinking, but looking to the depth of the well, only 8 feet, and to the unfavourable character of the sediment, it cannot be considered a safe water, and is certainly exposed to surface impurities. |
| 18             | Inverness. — Spring, "M. of O. 2."                  | Slightly yellow, turbid; large sediment; dull lustre; offensive smell; not tasted. | Masses of mycelium of fungi; minute amoeba; paramoecium and bacteria.                                                                                        | 1.80                                        | 0.120                               | None          | 0.0240              | 3.0809       | 5.0       | Some liquefaction after three days; extensive after five days.            | This water is totally unfit for drinking purposes.                                                                                                                                                                                     |

| No. of Sample. | Source.                                                                     | Physical Characters.                                                               | Microscopic Characters of the Sediment.                                                | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                             |                                                                                                                                                                               |
|----------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                             |                                                                                    |                                                                                        | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                      |                                                                                                                                                                               |
|                |                                                                             |                                                                                    |                                                                                        |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                      | Fixed.                                                                                                                                                                        |
| 19             | Woodon. — Well near Ordnance Row. Depth, 18 feet. Soil, clay.               | Colourless and clear; very small sediment; good lustre; palatable taste; no smell. | A little mineral grit.                                                                 | 4.80                                        | 0.032                               | 0.0040        | 0.005               | 7.2340       | 35.0      | 12.0                                      | Several colonies, a few liquefying, after four days; complete liquefaction after eight days.         | Unfit for use.                                                                                                                                                                |
| 20             | St. Helena.—Tap near cookhouse, Leclerc Hill Barracks.                      | Clear and colourless; small sediment; good lustre and palatable taste; no smell.   | Very small sediment; only a little mineral grit.                                       | 5.00                                        | 0.024                               | 0.0026        | 0.0066              | 3.3603       | 2.5       | 2.5                                       | Numerous colonies, several liquefying, after four days; almost entire liquefaction after seven days. | Fit for use.                                                                                                                                                                  |
| 21             | St. Helena.—Tap: colonial water supply main. Jamestown. St. Helena.         | Clear and colourless; small sediment; good lustre and taste; no smell.             | A little mineral grit and amorphous matter; a few diatoms (pinularia); no animal life. | 13.30                                       | 0.036                               | None          | 0.0060              | 4.2013       | 9.0       | 4.5                                       | Numerous colonies, several liquefying, after four days; almost entire liquefaction after seven days. | This water contains an excess of chlorine, probably derived from the sea. The organic matter (vegetable) has nearly all undergone oxidation. Usable after careful filtration. |
| 22             | Christchurch. — From tap at officers' mess, not used for drinking purposes. | Clear and colourless; small sediment; good lustre and taste; no smell.             | A large quantity of ferruginous matter; no trace of animal or vegetable life.          | 3.90                                        | 0.400                               | 0.0107        | 0.0120              | 0.9657       | 6.5       | 5.5                                       | A few colonies, some liquefying, after three days; complete liquefaction after six days.             | This water contains an excess of organic matter. It should be very carefully filtered before being used for drinking purposes.                                                |

| No. of Sample. | Source.                                                                              | Physical Characters.                                                         | Microscopic Characters of the Sediment.                                                               | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                                                 |                                                                                                                                                  |
|----------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                      |                                                                              |                                                                                                       | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                                          |                                                                                                                                                  |
|                |                                                                                      |                                                                              |                                                                                                       |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                                          | Fixed.                                                                                                                                           |
| 23             | Southampton. — Town supply.                                                          | Clear and colourless; very small sediment; good lustre and taste; palatable. | A few diatoms, some mycelium growth; several small infusoria crystals of carbonate of lime.           | 1.50                                        | 0.028                               | None          | 0.0044              | 1.0011       | 15.0      | 4.5                                       | A few colonies, some liquefying, after four days; liquefaction considerable after eight, and complete after eleven days. | Fit for use.                                                                                                                                     |
| 24             | Gosport, Station Hospital.—From back of U block. Waterworks supplied from the river. | Slightly yellow, not clear; large sediment; good lustre and taste; no smell. | Chiefly finely divided clay with a little mycelium growth; a few bacteria, and some minute infusoria. | 7.00                                        | 0.032                               | None          | 0.0024              | 0.2532       | 13.0      | 5.5                                       | Not examined                                                                                                             | This water should be filtered to remove suspended matters; it is fit for use.                                                                    |
| 25             | Gosport.— Station Hospital, officers' quarters. Tap in kitchen.                      | Same as Sample No. 24.                                                       | Same as Sample No. 24.                                                                                | 6.90                                        | 0.036                               | None          | 0.0024              | 0.2532       | 13.5      | 5.5                                       | Not examined                                                                                                             | Same as Sample No. 24.                                                                                                                           |
| 26             | Christchurch. — Well in meadow supplied from the river.                              | Clear and colourless; small sediment; good lustre and taste; no smell.       | Amorphous mineral matter containing iron; a few minute infusoria; cotton fibre.                       | 4.40                                        | 0.052                               | None          | 0.0120              | 0.7076       | 6.5       | 5.5                                       | A few colonies, some liquefying, after five days.                                                                        | Contains a slight excess of organic matter which appears to be of vegetable origin; requires filtration before being used for drinking purposes. |
| 27             | Christchurch. — Tap in No. 3, married quarters.                                      | Clear and colourless; small sediment; good lustre and taste; no smell.       | Amorphous mineral matter.                                                                             | 4.70                                        | 0.062                               | None          | 0.0120              | 0.9801       | 6.5       | 5.5                                       | A few colonies, some liquefying, after five days.                                                                        | Same as Sample No. 26.                                                                                                                           |

| No. of Sample. | Source.                                                              | Physical Characters.                                                              | Microscopic Characters of the Sediment.                                         | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           |        | Cultivation Experiments for Bacteria, &c.                                                                         | Remarks.                                                                             |
|----------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|--------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                |                                                                      |                                                                                   |                                                                                 | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |        |                                                                                                                   |                                                                                      |
|                |                                                                      |                                                                                   |                                                                                 |                                             |                                     |               |                     |              | Total.    | Fixed. |                                                                                                                   |                                                                                      |
| 28             | Christchurch. — From men's filter in barracks.                       | Same as No. 27.                                                                   | Vegetable debris; a morphous matter; some bacteria growths; dyed woollen fibre. | 4.20                                        | 0.040                               | None          | 0.0072              | 0.9135       | 7.0       | 5.5    | A few colonies, but no liquefaction, after five days. After seven days, no liquefaction.                          | Dust must gain access to this water, if not, the filtering medium should be seen to. |
| 29             | Christchurch. — From well at the back of Barrack Block.              | Slightly yellow, clear; very small sediment; good lustre and taste; no smell.     | A little vegetable debris, and a few minute infusoria.                          | 4.60                                        | 0.086                               | 0.0056        | 0.0187              | 4.0832       | 11.0      | 9.0    | Numerous colonies after two days; liquefaction considerable after four days, and nearly complete after six days.  | Unfit for drinking purposes.                                                         |
| 30             | Bisley Camp. — Taken from a running stream with sand and gravel bed. | Yellow, not turbid; small sediment; good lustre and taste; no smell.              | Amorphous matter containing iron, with some algae forms, and a few infusoria.   | 1.60                                        | 0.048                               | None          | 0.0144              | 0.0729       | 3.5       | 3.0    | Very slight growth after six days; slight liquefaction after eight days; after 18 days considerable liquefaction. | Fit for use.                                                                         |
| 31             | Lydd. — Well A., 27 feet deep. Sunk in clay and sand.                | Slightly yellow, not turbid; small sediment; fair lustre; earthy taste; no smell. | Sand; zooglaea growth; some fragments of deal, and a few minute infusoria.      | 57.00                                       | 0.048                               | 0.0297        | 0.0049              | 0.0795       | 32.5      | 28.0   | A few colonies, no liquefaction, after three days; very slight liquefaction after 24 days.                        | Unfit for drinking purposes.                                                         |
| 32             | Lydd. — Well B., 15 feet deep. Sunk in clay.                         | Very yellow, turbid; large sediment; taste of iron; no smell.                     | Amorphous mineral matter containing iron.                                       | 19.00                                       | 0.216                               | 0.0316        | 0.0379              | 0.1819       | 32.5      | 14.0   | Numerous colonies, a few liquefying, after three days; complete liquefaction after 12 days.                       | Ditto.                                                                               |
| 33             | Lydd. — Well C., 10 feet deep. In clay and a little sand.            | Yellow, turbid, large sediment; earthy taste; no smell.                           | Finely divided clay, with some mycelium growth, and a few infusoria.            | 33.00                                       | 0.188                               | None          | 0.0841              | 0.3299       | 27.5      | 6.5    | Numerous colonies, a few liquefying, after three days; complete liquefaction after 12 days.                       | Ditto.                                                                               |

| No. of Sample. | Source.                                                 | Physical Characters.                                                             | Microscopic Characters of the Sediment.                                   | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacterin, &c. | Remarks.                                                                                               |                                                                           |
|----------------|---------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
|                |                                                         |                                                                                  |                                                                           | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                        |                                                                           |
|                |                                                         |                                                                                  |                                                                           |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                        | Piled.                                                                    |
| 34             | Lydd. — Well D., 17 feet deep in sandy soil.            | Yellow, slightly turbid; small sediment; earthy taste; no smell.                 | Finely divided clay; a little sand; a few infusoria.                      | 6.10                                        | 0.200                               | 0.0020        | 0.0201              | 0.2024       | 27.5      | 5.0                                       | Very numerous colonies, mostly liquefying after 5 days; liquefaction nearly complete after seven days. | Unfit for drinking purposes.                                              |
| 35             | Lydd. — Well E., 27 feet deep in sand.                  | Greenish, slightly turbid; small sediment; good lustre; no smell.                | Amorphous matter mixed with sand; a few diatoms; dyed silk fibres (blue). | 3.60                                        | 0.148                               | 0.0056        | 0.0177              | 0.7348       | 10.0      | 5.0                                       | Two or three liquefying, and several other colonies after five days.                                   | This water may be used for drinking purposes after careful filtration.    |
| 36             | Lydd. — Well F., 30 feet deep in sandy soil.            | Very yellow, slightly turbid; earthy taste; no smell.                            | Amorphous mineral matter; finely divided clay; a few minute infusoria.    | 33.00                                       | 0.1720                              | 0.0056        | 0.0156              | 0.5094       | 32.5      | 9.0                                       | Very few colonies, and no liquefaction after seven days.                                               | This water contains a large excess of chloride. It is unfit for drinking. |
| 37             | Netley. — Well in village.                              | White, and slightly turbid; small sediment; dull lustre; earthy taste; no smell. | Spores of fungi and worm cotton fibres; bacteria in the zooglia form.     | 2.30                                        | 0.076                               | 0.0217        | 0.0199              | 1.8767       | 5.5       | 5.5                                       | Not examined                                                                                           | Unfit for use.                                                            |
| 38             | Caterham. — 1 A. Taken from asylum well, 150 feet deep. | Colourless and clear; small sediment; good lustre and taste; no smell.           | Mineral grit and crystals of carbonate of lime; no living form.           | 1.80                                        | 0.024                               | None          | 0.0025              | 2.1198       | 16.5      | 4.0                                       | A few dots after three days; some liquefaction after four days; nearly all liquefied after 14 days.    | Fit for use.                                                              |
| 39             | Caterham. — 2 A. From main first entering barracks.     | Same as No. 38                                                                   | Same as No. 38                                                            | 1.80                                        | 0.032                               | None          | 0.0025              | 2.0423       | 17.0      | 4.0                                       | A few dots after four days; some liquefaction after six days, nearly all liquefied after 14 days.      | Ditto.                                                                    |



| No. of Sample. | Source.                                                                                                                                                                 | Physical Characters.                                                     | Microscopic Characters of the Sediment.                   | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                                                |                                                                                                                                                                                                                                                                     |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                                                                                                         |                                                                          |                                                           | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                                         |                                                                                                                                                                                                                                                                     |
|                |                                                                                                                                                                         |                                                                          |                                                           |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                                         | Fixed.                                                                                                                                                                                                                                                              |
| 40             | Caterham. — 3 A. From tap in Victoria Block used for drinking.                                                                                                          | Same as No. 39                                                           | Same as No. 39                                            | 1.80                                        | 0.032                               | None          | 0.0025              | 2.0423       | 17.0      | 4.0                                       | Several dots after three days; some liquefaction after four days; nearly all liquefied after 14 days.                   | Fit for use.                                                                                                                                                                                                                                                        |
| 41             | Caterham. — 1 B. White Hill Spring Water Company. Taken from well on farm from which cows are supplied with drinking water. 500 feet deep. Treated by Clarke's process. | Slightly yellow, clear; small sediment; good lustre and taste; no smell. | Mineral grit, and a few brown spores of vegetable origin. | 1.60                                        | 0.024                               | None          | 0.0024              | 2.1198       | 5.0       | 4.0                                       | A few dots after three days; slight liquefaction after four days; nearly all liquefied after 14 days.                   | Ditto.                                                                                                                                                                                                                                                              |
| 42             | Dublin. — Richmond Barracks. Sample of sub-soil water.                                                                                                                  | Yellow, very turbid; very large sediment; no lustre; no smell.           | Finely divided clay.                                      | 12.00                                       | 0.072                               | 0.0054        | 0.0144              | 10.7754      | 32.5      | 25.0                                      | Several dots after three days; slight liquefaction after six days; not all liquefied after 22 days.                     | The chlorine is large. The nitric acid in the soil is very active, and has completely oxidised the organic matter. The soil, judging from this analysis, is a fairly clean one.                                                                                     |
| 43             | Dublin, Richmond Barracks. — Sample of sub-soil water.                                                                                                                  | Yellow, turbid; large sediment; dull lustre; no smell.                   | Finely divided clay.                                      | 2.60                                        | 0.132                               | 0.4088        | 0.0460              | 4.9263       | 11.5      | 9.5                                       | No growth after three days; numerous colonies, but no liquefaction after six days; slight liquefaction after nine days. | Contains less chlorine than previous sample, but the process of oxidation is incomplete, and the decomposition of organic matter is going on. The state of the soil is not satisfactory, but from analysis this does not appear to arise from sewage contamination. |

| No. of Sample. | Source.                                                                         | Physical Characters.                                                          | Microscopic Characters of the Sediment.                                                                                          | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                                                         |                                                                                                                                                                                                                                                      |
|----------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                 |                                                                               |                                                                                                                                  | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                                                  |                                                                                                                                                                                                                                                      |
|                |                                                                                 |                                                                               |                                                                                                                                  |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                                                  | Fixed.                                                                                                                                                                                                                                               |
| 44             | Alderney. — Well in rear of No. 1 married quarters at Whitegates, 50 feet deep. | Slightly yellow, not turbid; small sediment; good lustre and taste; no smell. | Spores of fungi, cotton, and dyed wool; starch granules; some oscillatörian filaments.                                           | 20.00                                       | 0.043                               | 0.0214        | 0.0091              | 14.9275      | 32.5      | 21.5                                      | A few dots after three days; numerous liquefying colonies after six days; nearly all liquefied after 13 days; strong odour.      | Very impure; quite unfit for drinking purposes.                                                                                                                                                                                                      |
| 45             | Alderney. — Well in rear of No. 6 married quarters at Whitegates, 50 feet deep. | Same as No. 45.                                                               | Epidermis of grass; spores of fungi; epithelium; cotton and woollen fibre; dyed wool (blue); a large amount of amorphous matter. | 21.50                                       | 0.123                               | 1.0160        | 0.0223              | 15.9330      | 37.5      | 21.5                                      | A few dots after three days; very numerous liquefying colonies after six days; nearly all liquefied after 11 days; strong odour. | Same as No. 45.                                                                                                                                                                                                                                      |
| 46             | Alderney. — Well at Arsenal Pumping Station, 55 feet deep.                      | Slightly yellow, clear; small sediment; good lustre; "musty" taste and smell. | Dyed wool; cotton fibre; grass; amorphous matter.                                                                                | 15.40                                       | 0.050                               | 0.0053        | 0.0048              | 5.9326       | 30.0      | 14.0                                      | Numerous dots after three days; nearly all liquefied after six days.                                                             | This water contains only a small quantity of organic matter which has not undergone oxidation, but the chlorine, nitric acid, and fixed hard salts are excessive, and it should not be used for drinking purposes if another supply can be obtained. |
| 47             | Christchurch. — Filter. Barrack Block Range.                                    | Clear and colourless; no sediment; good lustre and taste; no smell.           | None                                                                                                                             | 4.10                                        | 0.040                               | None          | 0.0100              | 0.7786       | 6.5       | 5.5                                       | Not examined                                                                                                                     | Fit for use.                                                                                                                                                                                                                                         |

| No. of Sample. | Source.                                                                                                           | Physical Characters.                                                                           | Microscopic Characters of the Sediment.                                                                                                  | Quantitative Analyses in parts per 100,000. |                                                 |                       |                                  |                 |           |        | Cultivation Experiments for Bacteria, &c.                                              | Remarks.                                                                                                                                                                  |
|----------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------|-----------------------|----------------------------------|-----------------|-----------|--------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                                                   |                                                                                                |                                                                                                                                          | Chlo-<br>rine.                              | Oxygen<br>required<br>for<br>Organic<br>Matter. | Free<br>Am-<br>monia. | Albu-<br>minoid<br>Am-<br>monia. | Nitric<br>Acid. | Hardness. |        |                                                                                        |                                                                                                                                                                           |
|                |                                                                                                                   |                                                                                                |                                                                                                                                          |                                             |                                                 |                       |                                  |                 | Total.    | Fixed. |                                                                                        |                                                                                                                                                                           |
| 48             | Christchurch. — Filter, No. 3 pas-<br>sage, married<br>soldiers' quar-<br>ters.                                   | Same as No. 47                                                                                 | A little mineral<br>grit.                                                                                                                | 4.10                                        | 0.040                                           | None                  | 0.0066                           | 0.7385          | 6.5       | 5.5    | Not examined                                                                           | Fit for use.                                                                                                                                                              |
| 49             | Yarmouth, Isle of<br>Wight. — From<br>a brick tank;<br>brought in cast-<br>iron pipes from<br>roofs of buildings. | Slightly yellow,<br>small sediment;<br>fair taste; slight-<br>ly turbid; no<br>smell.          | Amorphous mat-<br>ter; decaying<br>vegetable fibre;<br>cotton and wool-<br>len fibre; a few<br>paramoecium and<br>minute amoeba.         | 2.2                                         | 0.156                                           | 0.0298                | 0.0262                           | 0.1468          | 3.0       | 3.0    | Slight liquefaction after five days;<br>considerable after nine days.                  | Unfit for drinking<br>purposes. The<br>tank should be<br>cleaned out.                                                                                                     |
| 50             | Weedon. — "Q."<br>Well, S.W. Ord-<br>nance Store Yard.<br>Depth 12 feet.<br>Third clay.                           | Slightly yellow,<br>not turbid; very<br>small sediment;<br>good lustre and<br>taste; no smell. | Very small sedi-<br>ment; some my-<br>celium of fungi;<br>a few minute in-<br>fusoria.                                                   | 2.3                                         | 0.098                                           | 0.0224                | 0.0280                           | 0.2472          | 15.5      | 6.5    | Considerable liquefaction after<br>five days; nearly all liquefied<br>after nine days. | Unfit for drinking<br>purposes.                                                                                                                                           |
| 51             | Weedon. — "R."<br>Well at North<br>Pavilion. Depth<br>16 feet. Third<br>clay.                                     | Yellow; clear;<br>fair taste; no<br>smell.                                                     | Sand and finely<br>divided clay. No<br>animal or vegeta-<br>ble life.                                                                    | 3.0                                         | 0.063                                           | None                  | 0.0310                           | 0.1134          | 16.0      | 10.0   | Slight liquefaction after five<br>days, increasing slowly after<br>nine days.          | Unfit for drinking<br>purposes.                                                                                                                                           |
| 52             | Water taken from<br>River Black-<br>water, above the<br>Camp Sewage<br>Farm.                                      | Yellow, not tur-<br>bid; large sedi-<br>ment; fair lus-<br>tre; no smell.                      | Mineral grit; de-<br>caying vegetable<br>fibre; cotton and<br>linen fibre; bac-<br>teria; oxytricha;<br>paramoecium; fun-<br>gus spores. | 6.6                                         | 0.363                                           | 1.3288                | 0.1180                           | 0.5470          | 10.5      | 4.5    | Some liquefaction after five<br>days; nearly all liquefied after<br>19 days.           | The results of<br>analyses Nos. 53,<br>54, and 55, show<br>that the effluent<br>water is not so<br>impure as the<br>River Blackwater<br>(No. 53 Report)<br>above the Camp |

| No. of Sample. | Source.                                                                      | Physical Characters.                                                           | Microscopic Characters of the Sediment.                                                                                      | Quantitative Analyses in parts per 100,000. |                                                 |                       |                                  |                 |                     | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------|-----------------------|----------------------------------|-----------------|---------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                              |                                                                                |                                                                                                                              | Chlo-<br>rine.                              | Oxygen<br>required<br>for<br>Organic<br>Matter. | Free<br>Am-<br>monia. | Albu-<br>minoid<br>Am-<br>monia. | Nitric<br>Acid. | Hardness.<br>Total. |                                           |                                                                                                          | Fixed.                                                                                                                                                                                                                                                                                                                                                                              |
| 53             | Water from Black-River water, below the Sewage Farm, North Camp.             | Same as No. 52                                                                 | Large quantities of decaying vegetable fibre; oxytrichia; paramoecium; bacteria; cotton and linen fibre.                     | 5.4                                         | 0.538                                           | 0.9480                | 0.0698                           | 4.5863          | 11.5                | 6.5                                       | Slight liquefaction after five days; very considerable after 19 days.                                    | Sewage Farm. This is evident from the amount of free and albuminoid ammonia present. The organic matter in the effluent water has so far undergone oxidation that no nuisance can be caused by its introduction into the river, the water of which is not used for drinking purposes. The Blackwater is evidently largely polluted by unfiltered sewage above the Camp Sewage Farm. |
| 54             | Sewage water. — Effluent water after filtration through 4 to 6 feet of soil. | Yellow, not turbid; small sediment; good lustre; no smell.                     | Decaying vegetable fibre; less than in the previous samples.                                                                 | 9.4                                         | 0.232                                           | 0.3792                | 0.0504                           | 18.5602         | 21.0                | 10.5                                      | One or two colonies after 19 days; no liquefaction.                                                      |                                                                                                                                                                                                                                                                                                                                                                                     |
| 55             | Portland. From Cheyne Water-works Co. Well 140 feet deep.                    | Slightly yellow; not turbid; small sediment; good lustre; palatable; no smell. | Mineral grit and amorphous matter; vegetable debris and various infusoria, such as amphileptus, styloniobia, anguillula, &c. | 7.1                                         | 0.044                                           | None                  | 0.0097                           | 4.1680          | 10.5                | 6.5                                       | Innumerable colonies after five days; considerable liquefaction after six days; complete after ten days. | Requires filtration before being used for drinking purposes.                                                                                                                                                                                                                                                                                                                        |

| No. of Sample. | Source.                                                                                | Physical Characters.                                                                    | Microscopic Characters of the Sediment.                                                     | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                       |                                                                                                                                                                                                               |
|----------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                        |                                                                                         |                                                                                             | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                |                                                                                                                                                                                                               |
|                |                                                                                        |                                                                                         |                                                                                             |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                | Fixed.                                                                                                                                                                                                        |
| 56             | Portland.—One of the taps. Verne Citadel.                                              | Very slightly yellow; not turbid; very small sediment; good lustre and taste; no smell. | A little mineral grit and amorphous matter; vegetable debris; fragments of deal; dyed wool. | 7.0                                         | 0.120                               | None          | 0.0100              | 4.2314       | 10.5      | 6.5                                       | A few dots and one liquefying colony after five days; considerable liquefaction after 10 days. | Requires carefully to be filtered before being used for drinking purposes.                                                                                                                                    |
| 57             | Newbridge.—Officers' quarters. "F" house.                                              | Clear and colourless; small sediment; good lustre and taste; no smell.                  | A little mineral grit                                                                       | 3.0                                         | 0.036                               | None          | 0.0070              | 0.4719       | 21.0      | 7.0                                       | Not examined                                                                                   | Fit for use.                                                                                                                                                                                                  |
| 58             | Netley. — Hound Gate Lodge.                                                            | No colour, slightly turbid; sediment larvee; good lustre and taste; no smell.           | Ferruginous matter and a little sand.                                                       | 2.2                                         | 0.028                               | None          | 0.0032              | 0.3318       | 8.0       | 7.0                                       | Not examined                                                                                   | This water has all the characters of the deep well water at this hospital. The suspended matter is almost entirely iron peroxide, which can be easily removed by filtration. It is fit for drinking purposes. |
| 59             | Portland. — From tank near married quarters, Verne Citadel. Source, "syne Waterworks." | Yellow, very turbid; large sediment; no lustre; palatable taste; no smell.              | Silicate of alumina; vegetable debris; and numerous small infusoria.                        | 6.3                                         | 0.040                               | 0.0360        | 0.0227              | 4.2141       | 10.5      | 6.5                                       | A few dots after three days; some liquefaction after six days.                                 | Unfit for drinking. The conditions of storage are unsatisfactory.                                                                                                                                             |

| No. of Sample. | Source.                                                                                  | Physical Characters.                                                            | Microscopic Characters of the Sediment.                                                                             | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                                    |                              |
|----------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------|
|                |                                                                                          |                                                                                 |                                                                                                                     | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                             |                              |
|                |                                                                                          |                                                                                 |                                                                                                                     |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                             | Fixed.                       |
| 60             | Lydd.—Tube well, near Old Post House. Depth, 20 feet previous to inundation of brook.    | Yellow, slightly turbid; small sediment; no lustre; fair taste; no smell.       | Mineral grit and amorphous matter; cotton and linen fibre; a few crystalline particles; probably carbonate of lime. | 5.2                                         | 0.733                               | 0.0033        | 0.0642              | 0.8450       | 5.5       | 5.5                                       | Innumerable dots after five days; some liquefaction after seven days.                                       | Unfit for drinking purposes. |
| 61             | Lydd.—From same place as No. 60, by Norton tube well; after the inundation of the brook. | Same as No. 60                                                                  | Crystals of carbonate of lime; a little vegetable debris; woollen fibre; mycelium of fungi and their spores.        | 5.3                                         | 0.764                               | 0.0033        | 0.0480              | 0.1374       | 4.5       | 4.5                                       | Some dots after five days; numerous colonies after seven days; considerable liquefaction after 11 days.     | Same as No. 60.              |
| 62             | Lydd.—From old boring, Infantry Camp, by Norton's tube well.                             | Yellow, not turbid; small sediment; palatable; good lustre and taste; no smell. | Particles of sand; amorphous matter; bacteria in large numbers; woollen fibre; mycelium of fungi; cotton fibre.     | 7.5                                         | 0.356                               | None          | 0.0560              | 5.1033       | 14.0      | 12.0                                      | Nil after five days; one dot after seven days; a few colonies after 11 days; no liquefaction after 28 days. | Unfit for drinking purposes. |
| 63             | Nass, Ireland.—Rathwater Bar-racks.                                                      | Clear and colourless; small sediment; good lustre; palatable; no smell.         | Mineral grit, and a little mycelium of fungi.                                                                       | 1.3                                         | 0.032                               | 0.0026        | 0.0037              | 0.8493       | 14.0      | 7.0                                       | Not examined                                                                                                | Fit for use.                 |

| No. of Sample. | Source.                                      | Physical Characters.                                                   | Microscopic Characters of the Sediment.              | Quantitative Analyses in parts per 100,000. |                                     |               |                     |              |           | Cultivation Experiments for Bacteria, &c. | Remarks.                                                                                                    |                                      |
|----------------|----------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------|-------------------------------------|---------------|---------------------|--------------|-----------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------|
|                |                                              |                                                                        |                                                      | Chlorine.                                   | Oxygen required for Organic Matter. | Free Ammonia. | Albuminoid Ammonia. | Nitric Acid. | Hardness. |                                           |                                                                                                             |                                      |
|                |                                              |                                                                        |                                                      |                                             |                                     |               |                     |              | Total.    |                                           |                                                                                                             | Fixed.                               |
| 64             | Christchurch. —<br>Filter at officers' mess. | Clear and colourless; small sediment; good lustre and taste; no smell. | A little mineral grit.                               | 3.9                                         | 0.036                               | 0.1120        | 0.0096              | 0.0126       | 7.0       | 6.0                                       | Numerous liquefying and other colonies after three days; complete liquefaction after six days.              | Unfit for use.                       |
| 65             | Lydd.—"G" well,<br>25 feet deep.             | Yellow, turbid; no lustre; offensive smell.                            | Finely divided clay, and a few minute infusoria.     | 5.8                                         | —                                   | —             | —                   | —            | —         | —                                         | Innumerable dots after two days; some liquefaction after five days; complete after eight days.              | Very offensive smell. Unfit for use. |
| 66             | Lydd.—"H" well,<br>26 feet deep.             | Yellow; large sediment; no lustre; flat taste.                         | Finely divided clay, and a few minute infusoria.     | 6.3                                         | 0.306                               | 0.0210        | 0.0302              | 0.0150       | 4.5       | 3.0                                       | Some dots after two days; some liquefaction after five days; nearly all liquefied after 20 days.            | Unfit for drinking.                  |
| 67             | Lydd.—"I" well,<br>15 feet deep.             | Yellow; very large sediment; no lustre, no smell.                      | Finely divided clay; some sand, and a few infusoria. | 5.6                                         | 0.143                               | 0.0264        | 0.0400              | 11.6645      | 7.5       | 6.5                                       | Nil after two days; some liquefying and other colonies after five days; nearly all liquefied after 20 days. | Ditto.                               |

*Action on Lead.*—During the last few years numerous extensive outbreaks of lead poisoning have been traced to the water supplied as a public service in towns in the north of England, as Sheffield, Huddersfield, Chesterfield, Bacup, &c. These supplies have all been drawn from upland surface waters, and the outbreaks have occurred during periods of droughts and shortly following these. The one circumstance common to all appears to have been the presence of a free acid in the water. Mr. Sinclair White, of Sheffield, considers this to have been the cause of the solvent action of such water on lead. He found that the dissolving power was proportional to the acidity of the water; that filtration through charcoal of an active acid water removed both its acidity and activity; and that neutralisation by limestone, lime or bicarbonate of soda had the same effect. He believes the acid to be derived from decaying peat, i.e., humic acid; others believe it to be sulphuric acid or a derivation of this.

Mr. W. H. Power, of the Local Government Board, considers that what are commonly called the *causes* of "plumbo-solvent" action are really only *conditions*, the causes producing which are at present unknown. He suggests the possibility of the action being connected with the presence of some microphyte in the water.

The presence of silica, according to Crookes, Odling, and Tidy, to the extent of half a grain per gallon, has a protective influence, an insoluble lead silicate being formed. But although most waters that act markedly on lead contain very little silica, the degree of their activity does not appear proportional to the scarcity of silica present, and some such waters contain a considerable amount. It has been said that perfectly pure waters containing no gases have no action on lead; this, however, is not strictly true. In some experiments I made at Netley, I found that pure distilled water, free from carbon dioxide, took up lead from a leaden pipe. It must be remembered that there are certain conditions that have a great influence on the solvent action of the water upon the lead pipes, irrespective of the composition of the water itself. New lead pipes always give up more lead than old ones, and the length of time the water has been in contact with the lead increases the action. The water must not only pass through but remain in the pipes for some time. The amount dissolved increases during the first 24 hours; after that some is deposited, and after six days less lead is found in the water. Temperature also influences; hot water pipes yield more lead than cold water pipes. Pressure also helps the solvent action of water, and if this is increased up to 140 lbs. on the square inch, the difference is very marked, the solvent action being increased.

*Action on Iron.*—This is far less important because iron is not a poisonous metal, and a small quantity present in water gives a distinctly unpleasant taste. Temperature largely increases the solubility of this metal. The solvent action is said to be due to the presence of an excess of magnesium salt, particularly chloride of magnesium. The action may be prevented by submitting the water to the Porter-Clarke process of softening.

*Enteric Fever produced by impure water.*—The following instance of a case of this kind is worth recording here, not only as an example of the method employed to ascertain the source of the impurity, but also on account of the distance sewage matter percolated through the soil before entering the well. An epidemic of enteric fever occurred at New Herrington, Durham, in April 1889. There were in all 275 cases reported between the 1st April and the 7th June, on which date the epidemic may be said to have ceased.

The cause was traced by Dr. Page to the pollution of a deep well (330 feet) by the overflow from a tank containing farm sewage, situated *three-quarters of a mile* above this well. The overflow escaped and disappeared down a fissure in the ground, which entered the well through a crack in the steining 45 feet below the surface. Two tons of salt were thrown down this fissure, and the chloride entering through the "feeder" in the well rose from four grains per gallon to a maximum of 24 grains per gallon. The source of impurity was thus clearly established.

#### *Filter Experiments.*

In this year's report I am able to give the results of some experiments on M. Maignen's Filter and on M. Chamberland's New Filter. I have already referred to the latter. The pressure of work in our laboratory has obliged me to defer others that I had proposed, but as opportunity offers I hope to continue them. All the tests are severe ones, and the results afford some useful information.



EXPERIMENTS WITH MAIGNEN'S

| Constituents in Centigrammes per litre. | Tap Water.  |                          |                                 | Albumen Solution, 0·5 c.c. to 12 litres of Distilled Water. |                          |                                 | Albumen Solution, 0·25 c.c. to 12 litres of Distilled Water. |                          |                                 | Gelatine Solution, 0·25 grammes to 12 litres of Distilled Water. |                          |                                 |
|-----------------------------------------|-------------|--------------------------|---------------------------------|-------------------------------------------------------------|--------------------------|---------------------------------|--------------------------------------------------------------|--------------------------|---------------------------------|------------------------------------------------------------------|--------------------------|---------------------------------|
|                                         | Unfiltered. | Once through the Filter. | Three times through the Filter. | Unfiltered.                                                 | Once through the Filter. | Three times through the Filter. | Unfiltered.                                                  | Once through the Filter. | Three times through the Filter. | Unfiltered.                                                      | Once through the Filter. | Three times through the Filter. |
| Free Ammonia - - -                      | Nil.        | 0·0260                   | 0·0260                          | 0·0312                                                      | 0·0156                   | 0·0156                          | 0·0156                                                       | 0·0208                   | 0·0208                          | 0·0384                                                           | 0·0240                   | 0·0240                          |
| Albuminoid Ammonia - -                  | 0·0200      | 0·0160                   | 0·0120                          | 0·0308                                                      | 0·0088                   | 0·0044                          | 0·0440                                                       | 0·0144                   | 0·0044                          | 0·1320                                                           | 0·0088                   | 0·0088                          |
| Total Oxygen required - -               | 0·1480      | 0·1080                   | 0·0840                          | 0·1400                                                      | 0·1080                   | 0·1080                          | 0·1000                                                       | 0·0800                   | 0·0300                          | 0·0760                                                           | 0·0440                   | 0·0400                          |
| Oxygen required for Organic matter.     | 0·1320      | 0·1040                   | 0·0800                          | 0·1080                                                      | 0·1080                   | 0·0880                          | 0·0800                                                       | 0·0640                   | 0·0480                          | 0·0680                                                           | 0·0360                   | 0·0400                          |
| Total Hardness - - -                    | 6·00        | 6·00                     | 4·00                            | 1·00                                                        | 1·50                     | 1·00                            | 1·00                                                         | 1·50                     | 1·50                            | 1·00                                                             | 1·00                     | 0·50                            |
| Chlorine - - -                          | 1·50        | 3·00                     | 3·00                            | 0·30                                                        | 0·50                     | 0·60                            | 0·50                                                         | 1·10                     | 0·60                            | 0·20                                                             | 0·40                     | 0·40                            |

PER-CENTAGE.—INCREASE AND

|                                      | Once through. | Three times through. | Once through. | Three times through. | Once through. | Three times through. | Once through. | Three times through. |
|--------------------------------------|---------------|----------------------|---------------|----------------------|---------------|----------------------|---------------|----------------------|
| Free Ammonia - - -                   | +∞            | ∞                    | -50           | -50                  | +33·3         | +33·3                | -37·5         | -37·5                |
| Albuminoid Ammonia - - -             | -20           | -40                  | -71·5         | -85·7                | -90           | -90                  | -93·4         | -93·4                |
| Total Oxygen required - - -          | -27           | -43·3                | -22·9         | -22·9                | -20           | -20                  | -43           | -47·4                |
| Oxygen required for Organic matter - | -11·2         | -39·4                | 0             | -18·5                | -20           | -40                  | -47           | -41·3                |
| Total Hardness - - -                 | 0             | -33·3                | +50           | 0                    | +50           | +50                  | 0             | -50                  |
| Chlorine - - -                       | +100          | +100                 | +66·6         | +100                 | +120          | +20                  | +100          | +100                 |

## FILTRE RAPIDE, EXPORT A., No. 3.

| Gelatine Solution.<br>0.02 grammes to 12<br>litres of Distilled<br>Water. |                             |                                    | Hay Solution in<br>Distilled Water. |                             |                                    | Urine and Tap<br>Water<br>(1 in 3,000). |                             |                                    | Sewage Solution. About 30<br>Gallons passed through the Filter<br>in the five days. |                             |                              |                            |                             | Sewage<br>and Tap<br>Water.                              |           | Pure Distilled<br>Water. |
|---------------------------------------------------------------------------|-----------------------------|------------------------------------|-------------------------------------|-----------------------------|------------------------------------|-----------------------------------------|-----------------------------|------------------------------------|-------------------------------------------------------------------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|----------------------------------------------------------|-----------|--------------------------|
| Unfiltered.                                                               | Once through the<br>Filter. | Three times through<br>the Filter. | Unfiltered.                         | Once through the<br>Filter. | Three times through<br>the Filter. | Unfiltered.                             | Once through the<br>Filter. | Three times through<br>the Filter. | Unfiltered.                                                                         |                             |                              | Filtered.                  |                             | After the<br>Sewage pas-<br>sing through<br>for a month. |           | Filtered.                |
|                                                                           |                             |                                    |                                     |                             |                                    |                                         |                             |                                    | When made.                                                                          | After standing<br>two days. | After standing<br>five days. | After running<br>two days. | After running<br>five days. |                                                          |           |                          |
|                                                                           |                             |                                    |                                     |                             |                                    |                                         |                             |                                    |                                                                                     |                             |                              |                            |                             | Unfiltered.                                              | Filtered. |                          |
| 0.0490                                                                    | 0.0384                      | 0.0384                             | 0.0032                              | 0.0208                      | 0.0260                             | 0.0104                                  | Nil.                        | 0.0032                             | 5.7600                                                                              | 5.7600                      | 3.8400                       | 4.8000                     | 4.8000                      | 0.0156                                                   | 0.0104    | 0.3840                   |
| 0.0261                                                                    | 0.0176                      | 0.0088                             | 0.0238                              | 0.0192                      | 0.0192                             | 0.0144                                  | 0.0240                      | 0.0048                             | 0.0880                                                                              | 0.0792                      | 0.0528                       | 0.0362                     | 0.0220                      | 0.0240                                                   | 0.0288    | 0.0132                   |
| 0.0560                                                                    | 0.0400                      | 0.0600                             | 0.8320                              | 0.3000                      | 0.1800                             | 0.1080                                  | 0.0800                      | 0.0880                             | 0.3200                                                                              | 0.3280                      | 0.3160                       | 0.2680                     | 0.2360                      | 0.1600                                                   | 0.2480    | 0.3320                   |
| 0.0360                                                                    | 0.0280                      | 0.0480                             | 0.8000                              | 0.1240                      | 0.1000                             | 0.0880                                  | 0.0400                      | 0.0680                             | 0.2800                                                                              | 0.2960                      | 0.2720                       | 0.2360                     | 0.2220                      | 0.1280                                                   | 0.2400    | 0.2560                   |
| 1.00                                                                      | 2.00                        | 2.00                               | 2.00                                | 2.50                        | 2.50                               | 6.00                                    | 6.00                        | 6.00                               | 5.500                                                                               | 5.50                        | 5.50                         | 8.50                       | 8.00                        | 9.00                                                     | 12.00     | 8.50                     |
| 0.30                                                                      | 0.30                        | 0.30                               | 0.70                                | 0.60                        | 0.70                               | 2.60                                    | 1.70                        | 1.80                               | 8.60                                                                                | 8.60                        | 8.60                         | 7.90                       | 8.20                        | 2.90                                                     | 3.30      | 2.50                     |

## REDUCTION WITH THE ABOVE FILTER.

| Once<br>through. | Three times<br>through. | Once<br>through. | Three times<br>through. | Once<br>through. | Three times<br>through. | — | — | After two<br>Days. | After five<br>Days. | After a<br>Month. | Distilled<br>Water. |
|------------------|-------------------------|------------------|-------------------------|------------------|-------------------------|---|---|--------------------|---------------------|-------------------|---------------------|
| -20              | -20                     | +300             | +400                    | -100             | -50                     | — | — | -16.7              | +25                 | -33.3             | +∞                  |
| -33.3            | -66.6                   | -33.3            | -33.3                   | +66.6            | -66.6                   | — | — | -55.6              | -58.4               | +20               | +∞                  |
| -28.6            | +7.1                    | -64              | -78.4                   | -44.5            | -18.6                   | — | — | -18.3              | -25.3               | +55               | +∞                  |
| -22.3            | +33.3                   | -84.5            | -80                     | -54.6            | -22.8                   | — | — | -20.3              | -16.2               | +87.5             | +∞                  |
| +100             | +100                    | +25              | +25                     | 0                | 0                       | — | — | +54.5              | +46.4               | +33.3             | +∞                  |
| 0                | 0                       | -14.3            | 0                       | -34.6            | -27                     | — | — | -8                 | -4.7                | +13.7             | +∞                  |

The above experiments show much the same results as have been before obtained from animal charcoal as a filtering material, viz., that the purifying power is practically exhausted in less than a month, and that the medium then begins to yield impurity to water passed through it. (See final experiments, three last columns of table.)

With water really markedly impure, the filtering material would require renewal at least every three weeks, or even every fortnight. The presence of the calcareous and alkaline reagents would be of use in removing some part of the removable hardness, but the fixed hardness does not seem to be much affected. The use of "Delta" metal in those parts of the filter exposed to the action of the water is an improvement, as it is not likely to impart anything deleterious. The shape of the filter seems convenient, and it appears to be sufficiently strong to stand wear and tear. The rate of delivery (two gallons per hour) is as much as can be expected taking into consideration the size and the possibility of purification.

#### EXPERIMENTS ON THE "FILTRE CHAMBERLAND" SYSTÈME PASTEUR.

|                          | Tap Water.<br>(Upland Surface). |           | 5 c.c. of Albumen in<br>12 litres of Water. |           | Sewage and Tap<br>Water. 5 c.c.'s<br>Sewage to 12 litres<br>of Tap Water. |           |
|--------------------------|---------------------------------|-----------|---------------------------------------------|-----------|---------------------------------------------------------------------------|-----------|
|                          | Un-<br>filtered.                | Filtered. | Un-<br>filtered.                            | Filtered. | Un-<br>filtered.                                                          | Filtered. |
| Free Ammonia . . .       | 0.0056                          | 0.0056    | None.                                       | None.     | 0.0480                                                                    | 0.0380    |
| Albuminoid Ammonia . . . | 0.0192                          | 0.0144    | 0.0381                                      | 0.0163    | 0.0480                                                                    | 0.0240    |
| Total Oxygen . . .       | 0.1280                          | 0.0960    | 0.0960                                      | 0.0600    | 0.2160                                                                    | 0.1800    |
| Fixed do. . . . .        | 0.1200                          | 0.0960    | 0.0880                                      | 0.0600    | 0.2040                                                                    | 0.1680    |
| Total Hardness . . .     | 5.0000                          | 5.0000    | 0.5000                                      | 0.5000    | 4.5000                                                                    | 4.5000    |
| Chlorine . . . . .       | 2.5000                          | 2.5000    | 0.2000                                      | 0.2000    | 2.9000                                                                    | 2.6000    |

#### PER-CENTAGE, INCREASE, AND REDUCTION.

|                              | Tap Water. | Albumen.   | Sewage.    |
|------------------------------|------------|------------|------------|
| Free Ammonia . . . . .       | No change. | No change. | -25        |
| Albuminoid Ammonia . . . . . | -25        | -57.3      | -50        |
| Total Oxygen . . . . .       | -25        | -37.5      | -17.5      |
| Fixed do. . . . .            | -20        | -31.8      | -17.7      |
| Total Hardness . . . . .     | No change. | No change. | No change. |
| Chlorine . . . . .           | No change. | No change. | -10.4      |

These experiments show that this filter exerts considerable power in reducing all the organic constituents in the water; it removes nearly 50 per cent. of the albuminoid ammonia in the experiments on sewage water. A series of experiments as to its power of removing micro-organisms are being carried out and the results will be given in next year's report.

#### Food.

The Report of the Committee appointed to inquire into the question of the Soldier's Dietary was issued in June. Some very interesting details are to be found in this report. The evidence of the manager of Pearce's Dining and

Refreshment Rooms, an institution supplying about 30,000 meals daily to carmen, bricklayers, artificers, and other persons engaged in manual labour in London, shows that the average meat without bone supplied to each man for dinner was 5 ozs. uncooked, yielding when cooked about 4 ozs.

In a table of rations furnished by Brigade Surgeon Maunsell, who weighed 1,232 rations at Aldershot, the average amount of cooked meat supplied daily to the soldier was 7 ozs. 1 dram, exclusive of bone and dripping. The report states that the quality of the bread was universally complained of, and that this was well-founded. The defect in the bread was apparently due to brewers' yeast and to imperfect baking owing to the bread being baked in large batches. The Committee recommended that the ration bread should be made from the same class of flour as the hospital bread. They also strongly advise the observance of more care in cooking, and recommend that increased instruction should be given, in order that every unit may be supplied with a trained cook, and also that there should be greater variety in the meals, to make them more attractive and to reduce waste to a minimum.

The most interesting part of the report is that which refers to Colonel Burnett's system, as carried out by him in the 1st Battalion Royal Irish Rifles at Mullingar, and which is being gradually introduced into other regiments. The following, taken from a memorandum kindly sent to me by Colonel Burnett, will show his method, and will be read with interest :—

"While on the subject of Soldier's Messing, I shall state the further progress I have made in this direction. In a former report I related fully how step by step I had worked improvements and introduced reforms in the breakfasts and suppers, and described by what process I had been enabled to supply each man daily with a basin of good nourishing soup in addition to his ordinary dinner. When I had secured a permanent footing for my system of breakfasts and suppers, I turned my attention again to the dinners, determined I would not rest until I had worked a beneficial change in them.

"Looking into them, I found that there was a wearisome round of 'bakes' and 'stews,' with a slight variation now and then of 'roast' or 'curry,' beyond the making of which the master cook's knowledge did not seem to extend.

"A very little thinking convinced me that the constant repetition of these dishes must in time make them distasteful to the soldier and be one of the chief sources of causing him to feel dissatisfied with his rations, and I hastened to put this right, by providing him with a different dinner for every day in the week.

"In managing this I had to particularly watch that the expenses incident to this arrangement could be met by the Grocery Book, and this after a careful study of details I accomplished with the following result :—

*Diary of Dinners for a Week.*

Bake.  
Irish stew or curried stew.  
Bacon and cabbage.  
Yorkshire pudding.  
Turkish pillau.  
Meat pies.  
Roast.

"This is a record of the actual dinners supplied every week to the men of my battalion.

"Besides these dinners and the basin of soup, which is provided daily, I give the men a dish of haricot beans with their dinners as an extra on Saturdays, and on Sundays plum pudding, &c. The haricot beans I selected on account of their cheapness, the high place they occupy in the scale of nutritive values, and moreover, being cooked in a tempting, appetizing way, they are a favourite with the men.

"About this time I found that there was a slight want of uniformity amongst the companies in the varieties of breakfasts and suppers prepared for

their men. Some companies took a lot of trouble to vary the meals as much as possible, while others took advantage of the cheapness of a particular dish (such as porridge) to provide it more often than was advisable, preferring to make ends meet in this way rather than take the trouble of economising, in the true sense of the word, by putting forth powers of management and drawing the line between real requirements and unnecessary waste. To ensure uniformity in this respect I ordered the following lists of meals for a week to be adhered to.

*“Breakfasts.”*—Mutton chops, porridge, fried bacon and eggs, butter, fried liver, porridge, fried bacon and liver.

*“Suppers.”*—Irish stew, porridge, haricot beans, potatoes and  $\frac{1}{4}$  lb. extra bread per man, fish, curried stew, porridge, fish pie.

“In lieu of the second supper of porridge the men have the option of having one of the other suppers provided. In the winter, when the price of fresh fish comes within our reach, the second porridge supper is discontinued, and each man receives instead a supper of fresh herrings served with hot potatoes, a dish which proves a wonderfully attractive one.

“This week, finding the spirit of management developing in the companies, I have abolished the second porridge breakfast and have substituted two ounces of bacon per man instead. The mutton chop breakfast consists of a quarter lb. of meat per man, and I get this at contract price by taking advantage of the meat contract to draw on ‘mutton day’ on payment the full quantity which the regulations empower me to demand.”

#### *Concentrated Foods.*

During the year the following samples of food have been examined :—

1. “Preserved roast beef.”
2. “Army food” prepared by the “Armour Canning Company.”
3. “Preserved cabbage.”
4. “Preserved carrots.”
5. “Pure sterilized Alpine milk.”

The analyses and reports on each of these are as follows :—

**REPORT** on a sample of preserved roast beef which has been kept in store at Woolwich Dockyard for two years. Two tins received, one of 6 lbs. and one of 2 lbs., both cylindrical. The larger one  $6\frac{1}{2}$  inches high, diameter  $6\frac{3}{16}$  inches; the smaller one  $4\frac{3}{8}$  inches high, diameter  $4\frac{1}{2}$  inches. On label “Choice Roast Beef packed by the Eastman Canning Company.”

|                           |   |               |   |                     |
|---------------------------|---|---------------|---|---------------------|
| Gross weight of large tin | = | 3,109 grammes | = | 6.8398 lbs. avoird. |
| Weight of tin             | = | 385           | = | 0.8470              |

|              |   |       |   |        |
|--------------|---|-------|---|--------|
| Net contents | = | 2,724 | = | 5.9928 |
|--------------|---|-------|---|--------|

|                           |   |               |   |                     |
|---------------------------|---|---------------|---|---------------------|
| Gross weight of small tin | = | 1,106 grammes | = | 2.4388 lbs. avoird. |
| Weight of tin             | = | 185           | = | 0.4079              |

|              |   |     |   |        |
|--------------|---|-----|---|--------|
| Net contents | = | 921 | = | 2.0309 |
|--------------|---|-----|---|--------|

#### *Large tin :*

Weight of beef = 1,634 grammes = 3.5948 lbs. avoird. = 60 per cent.

Weight of fat and jelly = 1,090 grammes = 2.398 lbs. avoird. = 40 per cent.

#### *Small tin :*

Weight of beef = 560 grammes = 1.232 lbs. avoird. = 60.8 per cent.

Weight of fat and jelly = 361 grammes = 0.7942 lbs. avoird. = 39.2 per cent.

*Physical Characters.*

On opening each tin the meat was found surrounded by a clear jelly. Both were excellent to taste, perfectly sweet and the meat very palatable, and not "stringy" or overcooked as so often is the case in this class of foods. Nearly all the fat was intimately mixed with the jelly and could not be separated, they were analysed together. There was no waste. All the contents of each tin were good. The colour was excellent and the jelly clear and firm.

*Chemical Analysis.***I. Beef contained—**

|                           |   |   |        |                 |
|---------------------------|---|---|--------|-----------------|
| Water                     | - | - | -      | 68.5970         |
| Albuminates, indigestible | - | - | 3.5000 | 21.5918         |
| „ digestible              | - | - | 9.1875 |                 |
| „ peptones                | - | - | 1.9687 |                 |
| „ meat extracts           | - | - | 6.9356 |                 |
| Fats                      | - | - | -      | 8.7822          |
| Mineral constituents      | - | - | -      | 1.0326          |
| <b>Total</b>              | - | - | -      | <b>100.0036</b> |

**The ash contained—**

|                    |   |   |   |                  |
|--------------------|---|---|---|------------------|
| Sodium chloride    | - | - | - | 0.5738 per cent. |
| Alkalinity as soda | - | - | - | 0.1347 „         |
| Phosphoric acid    | - | - | - | 0.4347 „         |

**II. Jelly and fat contained—**

|                           |   |   |        |                 |
|---------------------------|---|---|--------|-----------------|
| Water                     | - | - | -      | 73.8853         |
| Albuminates, indigestible | - | - | 1.9100 | 10.8272         |
| „ digestible              | - | - | 4.8712 |                 |
| „ peptones                | - | - | 3.7187 |                 |
| „ meat extract            | - | - | 0.3273 |                 |
| Fats                      | - | - | -      | 14.4762         |
| Mineral constituents      | - | - | -      | 0.8562          |
| <b>Total</b>              | - | - | -      | <b>100.0449</b> |

**The ash contained—**

|                    |   |   |   |                  |
|--------------------|---|---|---|------------------|
| Sodium chloride    | - | - | - | 0.0965 per cent. |
| Alkalinity as soda | - | - | - | 0.1361 „         |
| Phosphoric acid    | - | - | - | 0.2561 „         |

**III. The mean contents of the two consisted of—**

|                           |   |   |        |                 |
|---------------------------|---|---|--------|-----------------|
| Water                     | - | - | -      | 70.6700         |
| Albuminates, indigestible | - | - | 2.8767 | 17.3720         |
| „ digestible              | - | - | 7.4955 |                 |
| „ peptones                | - | - | 2.6526 |                 |
| „ meat extracts           | - | - | 4.3472 |                 |
| Fats                      | - | - | -      | 11.0142         |
| Mineral constituents      | - | - | -      | 0.9634          |
| <b>Total</b>              | - | - | -      | <b>100.0196</b> |

**The mean ash contained—**

|                    |   |   |   |                  |
|--------------------|---|---|---|------------------|
| Sodium chloride    | - | - | - | 0.3866 per cent. |
| Alkalinity as soda | - | - | - | 0.1139 „         |
| Phosphoric acid    | - | - | - | 0.3679 „         |

*Report.*

This is an excellent sample of preserved meat, and is similar as regards its chemical composition to many others in the market. It has, however, this advantage, that the meat fibre is less "stringy" and the contents of the tin are far more palatable than any sample we have hitherto examined at Netley. The fat is equally distributed throughout the meat and the jelly is excellent. The tinning appears to have been done with great care, and the meat has not deteriorated in the smallest degree by keeping.

REPORT on a sample of "Army Food" prepared by the Armour Canning Company, forwarded from the Supply Reserve Dépôt, Woolwich. Received in a small tin, similar to that used for sardines, hermetically sealed, with a patent opening. Length of tin  $4\frac{1}{2}$  inches, width  $3\frac{1}{2}$  inches, height  $1\frac{5}{8}$  inches.

|               |   |     |             |        |                     |
|---------------|---|-----|-------------|--------|---------------------|
| Gross weight  | - | =   | 466 grammes | =      | 1·0252 lbs. avoird. |
| Weight of tin | - | =   | 128         | „      | 0·2816              |
| Net contents  | = | 338 | „           | 0·7436 | „                   |

*Physical Characters.*

Resembles potted meat; taste and smell good; deep brown colour; rather moist. Tin opened on May 3rd. The contents were very sour on May 5th.

*Chemical Analysis.*

|                           |   |   |         |   |                 |
|---------------------------|---|---|---------|---|-----------------|
| Water                     | - | - | -       | - | 64·2545         |
| Albuminates, indigestible | - | - | 4·3750  | } | 23·8414         |
| „ digestible              | - | - | 11·3750 |   |                 |
| „ peptones                | - | - | 5·2500  |   |                 |
| „ meat extracts           | - | - | 2·8414  |   |                 |
| Fat                       | - | - | -       | - | 9·3521          |
| Mineral constituents      | - | - | -       | - | 2·2686          |
| Total                     | - | - | -       | - | 99·7166         |
| Loss                      | - | - | -       | - | 0·2834          |
|                           |   |   |         |   | <u>100·0000</u> |

In this sample of food the per-centage of water is very large and the fat is comparatively small. The meat was disagreeable to taste 24 hours after opening the tin, and was quite sour on the second day, although the weather was cool at the time of making the analysis. The large amount of moisture may in some measure account for this. There is nothing special to recommend this "Army Food," and it is certainly inferior to many other samples reported on.

REPORT on samples of "Preserved Vegetables" received from Supply Reserve Depot, Woolwich Dockyard.

Four tins received, two containing carrots and two cabbage. Each tin cylindrical in shape,  $4\frac{1}{8}$  inches high, and  $4\frac{3}{8}$  inches in diameter.

I.—Cabbage.

|                                  |   |               |   |                     |
|----------------------------------|---|---------------|---|---------------------|
| Total weight of tin and contents | = | 1,031 grammes | = | 2·2734 lbs. avoird. |
| Weight of tin alone              | - | 178           | „ | ·3925 „             |
| Net contents                     | - | 853           | „ | 1·8809 „            |

*Physical Characters.*

On opening the tin there was a most offensive smell of cabbage water. This was so bad that the tin had, with its contents, to be removed to the open air.

The tin contained a small white cabbage weighing 463 grammes. The fluid in the tin weighed 390 grammes; it was of a yellow colour, and smelt of sulphuretted hydrogen. The inside of the tin was corroded and deeply stained. The fluid contents were of a strongly acid reaction.

*Chemical Analysis.*

The qualitative examination showed lead to be present in the liquid in large quantity. On quantitative analysis the liquid was found to contain  $\frac{1}{4}$  of a grain of lead.

The presence of lead in the quantity found in the fluid contents condemns the use of this vegetable as a ration. The lead is probably due to the tin having been soldered on the inside, and the acid of the liquid has acted on the solder.

II.—Carrots.

These were in the same sized tin and the same shape as contained the cabbage.

|                                  |   |             |   |                     |
|----------------------------------|---|-------------|---|---------------------|
| Total weight of tin and contents | = | 928 grammes | = | 2·0463 lbs. avoird. |
| Weight of tin                    | - | 193         | „ | ·4255 „             |
| Net contents                     | - | 735         | „ | 1·6208 „            |

*Physical Characters.*

On opening the tin there was a sweet and agreeable smell of fresh carrots. The carrots were whole and of excellent quality. The fluid had an acid reaction. The tin was bright on the inside and was not corroded in any part. It was, however, soldered on the inside. On taking out the carrots, the quantity of fluid was found to weigh 212 grammes.

*Chemical Analysis.*

Lead was found in the fluid amounting to 0·1315 grains or about  $\frac{1}{4}$  of the amount found in the cabbage water. This, although a small quantity, would probably increase on keeping, and there is no guarantee that another tin may not contain a larger quantity.

Apart from the fact that both these samples contain lead, and are unfit on this account for issue to troops, it may be useful to consider the antiscorbutic properties of this class of vegetables, for it is chiefly on this account that they will be used on military service.



For comparison, the following table may be useful, as it shows the amount of salts in grains per pound of a few of the commoner kinds of vegetables.

*Salts in grains per pound.*

|                |   |   |   |   |     |
|----------------|---|---|---|---|-----|
| Sweet potatoes | - | - | - | - | 203 |
| Yam            | - | - | - | - | 91  |
| Parsnips       | - | - | - | - | 70  |
| Carrots        | - | - | - | - | 70  |
| Turnips        | - | - | - | - | 42  |
| Cabbage        | - | - | - | - | 42  |

It will be seen from this table that cabbage is lowest in the scale of vegetables as regards its antiscorbutic properties, and as the liquid, which contains a large quantity of the salts, must in any case be rejected, the value of the vegetable alone is extremely small, and would not be equivalent in any degree to its weight and expense of carriage in the field. Carrots, on the other hand, are higher in the scale, and if free from deleterious properties, introduced in manufacture, may be useful.

**REPORT on a sample of "Pure Sterilized Alpine Milk."**

Contained in a cylindrical tin  $3\frac{3}{8}$  inches high and 3 inches diameter.

Total weight of tin and contents = 415 grammes = 0·9151 lbs.

Weight of tin - - - 75 " 0·1654 "

Net contents - - - 340 " 0·7497 "

Mixed with twice its bulk of water it is stated to be equal to ordinary milk.

*Physical Characters.*

Good rich colour, with pleasant but slightly astringent taste. More liquid than ordinary condensed milk. Reaction. Acid.

*Chemical Analysis.*

|        |   |   |   |   |        |
|--------|---|---|---|---|--------|
| Water  | - | - | - | - | 59·23  |
| Fat    | - | - | - | - | 11·71  |
| Lactin | - | - | - | - | 14·82  |
| Casein | - | - | - | - | 11·90  |
| Ash    | - | - | - | - | 2·34   |
| Total  | - | - | - | - | 100·00 |

By the saccharimeter the lactin was found to be 14·75 per cent. No cane sugar was added to the milk in its preparation.

Compared with ordinary milk when diluted with twice its bulk of water as directed.

| Constituents. |   |   |   |   | Ordinary Milk. | Condensed Milk. |
|---------------|---|---|---|---|----------------|-----------------|
| Water         | - | - | - | - | 86·80          | 86·42           |
| Fat           | - | - | - | - | 3·70           | 3·90            |
| Lactin        | - | - | - | - | 4·80           | 4·94            |
| Casein        | - | - | - | - | 4·00           | 3·96            |
| Ash           | - | - | - | - | ·70            | ·78             |
| Total         | - | - | - | - | 100·00         | 100·00          |

When the tin is opened the contents do not keep for any time; after 24 hours it was unfit for use. The directions on the label state that when once opened "the contents should be treated like fresh milk and used within a short time."

This appears to be an excellent sample of "condensed milk," and used in the proportion stated is equal to ordinary milk of good quality.

REPORT on samples of "Bread" received from Aldershot, sent by order of the Committee on Soldier's Dietary.

Three 2 lb. loaves of each sample received.

No. 1 Sample.—Marked "Hospital loaf, baked at Aldershot on April 4th, 1889."

#### *Physical Characters.*

The sample was very well baked, with an excellent crust on all sides; colour white, with the slightest tinge of yellow; taste, very good. Smell, after five days, perfectly sweet.

#### *Chemical Analysis.*

The crust carefully removed weighed = 278 grammes = 30·08 per cent.  
and the crumb weighed - - 646 ,, 69·92 ,,

Total weight - - 924 ,, 100·00 ,,

$$·924 \times 2·2 = 2·0328 \text{ lbs. avoirdupois.}$$

|                                                            | Crust.   | Crumb.   | On the whole loaf. |
|------------------------------------------------------------|----------|----------|--------------------|
| Water . . . . .                                            | 24·3000  | 41·6300  | 36·4352            |
| Fats . . . . .                                             | 0·8300   | 0·7000   | 0·7541             |
| Albuminates . . . . .                                      | 10·5000  | 7·8750   | 8·6316             |
| Carbo-hydrates . . . . .                                   | 62·6600  | 49·2150  | 53·2563            |
| Salts . . . . .                                            | 1·8000   | 0·5900   | 0·8968             |
| Total . . . . .                                            | 100·0000 | 100·0000 | 100·0000           |
| Acidity, calculated as oxalic acid, }<br>per cent. . . . . | 0·0315   | 0·0630   | 0·0635             |

No. 2 Sample.—Marked "Ration loaf, baked at Aldershot, April 4th, 1889."

#### *Physical Characters.*

The sample is well baked; crust on all sides; not quite so white, but very little difference between it and No. 1 sample; taste, very good, and perfectly sweet after five days.

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*Chemical Analysis.*

|                 |   |                 |                 |
|-----------------|---|-----------------|-----------------|
| Weight of crust | - | = 269 grammes = | 28·86 per cent. |
| „ crumb         | - | 663 „           | 71·14 „         |
| Total weight    |   | <u>932</u> „    | <u>100·00</u> „ |

$$·932 \times 2·2 = 2·0504 \text{ lbs. avoirdupois.}$$

| —                                                          | Crust.   | Crumb.   | On the whole loaf. |
|------------------------------------------------------------|----------|----------|--------------------|
| Water . . . . .                                            | 23·9480  | 41·2900  | 36·2880            |
| Fats . . . . .                                             | 0·7900   | 0·7300   | 0·7473             |
| Albuminates . . . . .                                      | 10·0625  | 9·1875   | 9·4399             |
| Carbo-hydrates . . . . .                                   | 63·7995  | 47·6425  | 52·3057            |
| Salts . . . . .                                            | 1·4000   | 1·1500   | 1·2221             |
| Total . . . . .                                            | 100·0000 | 100·0000 | 100·0000           |
| Acidity, calculated as oxalic acid, }<br>per cent. . . . . | 0·0804   | 0·0819   | 0·0728             |

The following table shows the difference between these two samples of bread, and the mean of fine wheaten bread from a large number of analyses collected by König:—

| —                        | No. 1 Sample. | No. 2 Sample. | Mean for fine bread (König). |
|--------------------------|---------------|---------------|------------------------------|
| Water . . . . .          | 36·4352       | 36·2880       | 36·5100                      |
| Fats . . . . .           | 0·7541        | 0·7473        | 0·7700                       |
| Albuminates . . . . .    | 8·6646        | 9·4399        | 6·8200                       |
| Carbo-hydrates . . . . . | 53·2593       | 52·3057       | 52·7200                      |
| Salts . . . . .          | 0·8868        | 1·2221        | 1·1800                       |

The following table shows the excess or deficiency with the standard sample:—

| —                        | No. 1 Sample. | No. 2 Sample. |
|--------------------------|---------------|---------------|
| Water . . . . .          | - 2·0750      | - 2·2250      |
| Fats . . . . .           | - 0·0159      | - 0·0237      |
| Albuminates . . . . .    | + 1·8446      | + 2·6199      |
| Carbo-hydrates . . . . . | + 0·5393      | - 0·4143      |
| Salts . . . . .          | - 0·2932      | + 0·0421      |

The acidity in both these samples is low; in No. 1 sample it is equal to 3·4751 grains per pound, and in No. 2 sample is equal to 5·0966 grains per pound, the mean in good bread being about six grains per pound. The bread did not gain in acidity after keeping for five days. The per-centage of water is below the mean. The albuminates are large, and show that the bread is made from a flour rich in gluten. They are above the average. The carbohydrates are also high. No. 2 sample is slightly richer in nitrogenous substances and salts than No. 1 sample. Both samples are of excellent quality and good weight. After six days they are quite free from sourness and are not dry. It is almost impossible to tell the difference between the two loaves, and chemical analysis shows them to be of very similar composition.

Report on a sample of bread received from the supply branch, Army Service Corps, Netley, as issued to the Royal Victoria Hospital.

#### *Physical Characters.*

The sample appeared to be well baked; there was crust on two sides only, top and bottom. On the top being cut off the colour was slightly yellow. There was a distinct taste (not acid) left on the palate after eating a small quantity. Smell, rather "close."

#### *Chemical Analysis.*

Total weight of loaf = 908 grammes = 2·0000 lbs. avoirdupois.  
 The crust weighed 147 " 0·3241 "  
 The crumb weighed 761 " 1·6759 "  
 The per-centage of crust = 16·2.  
 " " crumb = 83·8.

Acidity in grains per pound (as acetic acid) :—

|        |              |        |
|--------|--------------|--------|
| Crust. |              | Crumb. |
| 3·78   |              | 6·30   |
|        | After 2 days | 7·14   |
|        | " 4 "        | 7·98   |

Bread mouldy on the 5th day.

| —                        | Crust.   | Crumb.   | On the whole loaf. |
|--------------------------|----------|----------|--------------------|
| Water - - - - -          | 9·8825   | 43·2531  | 37·8471            |
| Fat - - - - -            | 0·8634   | 0·7684   | 0·7638             |
| Albuminates - - - - -    | 8·7068   | 6·7693   | 7·0077             |
| Carbo-hydrates - - - - - | 78·1783  | 47·5827  | 52·5302            |
| Salts - - - - -          | 2·2790   | 1·6265   | 1·7322             |
| Total - - - - -          | 100·0000 | 100·0000 | 100·0000           |

In this sample of bread the per-centage of crust is very small, amounting only to 16 per cent., whereas the crust ought at least to average 30 per cent. In the samples received at the same time from Aldershot for comparison with this loaf, the hospital bread gave 30·08 per cent., and the ration bread 28·86 per cent.

Several analyses of the bread issued at Netley have been made in this laboratory, the mean per-centage of crust has been 16·8, or only one half what it should be.

The mean water free solids of this loaf are :—

|                         |   |   |   |   |          |
|-------------------------|---|---|---|---|----------|
| Crust                   | - | - | - | - | 14·5990  |
| Crumb                   | - | - | - | - | 47·5539  |
|                         |   |   |   |   | <hr/>    |
| Total water free solids | - | - | - | - | 62·1529  |
| Water                   | - | - | - | - | 37·8471  |
|                         |   |   |   |   | <hr/>    |
| Total                   | - | - | - | - | 100·0000 |
|                         |   |   |   |   | <hr/>    |

The amount of crust has great influence on the weight : (a) by preventing evaporation ; (b) because there is originally less water in the loaf and it keeps better.

The free acid in this bread is larger than in the Aldershot bread, but at the same time it cannot be said to be excessive. One point of note is that this acidity increases rapidly by keeping the bread, especially the acidity in the crumb. On the first day it was 6·3 ; after two days, 7·14 ; and after four days, 7·98.

On the fifth day the bread was covered with fungi. On the other hand, the Aldershot bread after five days was perfectly sweet and good.

There is a peculiar taste, difficult to describe ; it leaves a "twang" on the palate, and I think this must be due to the yeast used, or to something in the process of baking. This sample of bread is not good. The plan adopted at Aldershot should be followed at Netley.

#### REPORT on a sample of "Health-Guard." A "Meat Preservative" Disinfecting and Deodorising Compound.

This compound is stated to be "valuable for preserving meat and other perishable articles of food on the march ; for mixture with well and polluted river water ; neutralizing dangerous properties ; also valuable as a spray "and for dressings in case of operations."

##### I.—Physical Characters.

A dull white powder, taste, slightly saline. A four per cent. solution, which is the strongest recommended for use, is quite clear, the whole of the powder being dissolved.

##### II.—Chemical Analysis.

|                                 |   |   |   |   |   |        |           |
|---------------------------------|---|---|---|---|---|--------|-----------|
| Water                           | - | - | - | - | - | 8·15   | per cent. |
| Ash                             | - | - | - | - | - | 68·06  | "         |
| Volatile and combustible matter | - | - | - | - | - | 23·79  | "         |
|                                 |   |   |   |   |   | <hr/>  |           |
| Total                           | - | - | - | - | - | 100·00 | "         |
|                                 |   |   |   |   |   | <hr/>  |           |

The bases present consist of soda with traces of potash, and the acidulous radicals are boric and salicylic acids, sulphuric, nitric, and hydrochloric acids. Quantitative examination showed about 0·32 per cent. of radical chlorine.

Qualitative tests show a considerable quantity of boric and salicylic acids, which are probably in combination with soda as a quadriborate and salicylate of soda.

*Practical Application with Milk.*

A four per cent. solution of "Health-Guard" was made by dissolving 4 grammes in 100 c.c.'s of distilled water. According to the directions given, a solution of this strength should be used for the preservation of meat and fish; but for milk only  $\frac{1}{2}$  per cent. is required.

To 100 c.c.'s of fresh milk were added respectively  $\frac{1}{2}$ , 1, and  $1\frac{1}{2}$  grammes of "Health-Guard," and the condition of the milk was carefully noted on successive days as shown in Table No. 1.

TABLE No. 1.

| 100 c.c. Milk.   | (a.)<br>$\frac{1}{2}$ Per cent.<br>added.       | (b.)<br>1 Per cent.<br>added.     | (c.)<br>$1\frac{1}{2}$ Per cent.<br>added. | Original Milk.   |
|------------------|-------------------------------------------------|-----------------------------------|--------------------------------------------|------------------|
| After 2 days . . | Sweet to taste                                  | Sweet to taste                    | Sweet to taste                             | Slightly sour.   |
| " 3 days . .     | do.                                             | do.                               | do.                                        | Sour.            |
| " 5 days . .     | do.                                             | do.                               | do.                                        | Very sour.       |
| " 7 days . .     | do.                                             | do.                               | do.                                        | Fungi and mould  |
| " 9 days . .     | Taste, slightly<br>bitter. Faint<br>acid smell. | Slightly better.<br>Cheesy smell. | Bitter taste. No<br>smell.                 | Very malodorous. |

The samples were kept in porcelain dishes and were freely exposed to the air, but protected from dust. Two series of experiments were undertaken. One from August 13th to August 23rd, during which time the weather was dry and warm, the average temperature being  $69.2^{\circ}$  Fahr. The second series, from September 14th to September 23rd, the average temperature being  $64.2^{\circ}$  Fahr.; but there was more moisture present in the air. The same results were obtained in both experiments.

These experiments show that milk when treated with "Health-Guard" remained sweet for nine days. On the tenth day all the samples were quite sour. Those that had  $\frac{1}{2}$  and 1 per cent. added were more so than the one with  $1\frac{1}{2}$  per cent.

The sample of untreated milk was sour on the third day. On the second day it was slightly alkaline.

*Practical Application with Meat*

A piece of fresh beef was immersed in a 4 per cent. solution and allowed to remain in it for three minutes, it was then suspended from a tripod on a clean glass rod and freely exposed to the air. Another portion untreated was placed near it. The meat experimented on was "frozen meat" as supplied to the troops at this station. The experiments were undertaken on September 13th; the weather was mild but somewhat damp, the average temperature being  $64^{\circ}$  Fahr.

On September 14th the meat untreated was moist and flabby. On September 15th it was decidedly sour, and on the 16th, or after three days it had decomposed. The reason it turned bad so soon was that frozen meat does not keep well after it has once thawed.

The surface of the other sample (which had been immersed in a solution of "Health-Guard") was dry and the meat darker in colour. This condition remained unchanged until September 19th, when one or two small spots of mould appeared on the surface. These, however, did not spread, and the meat gradually dried up and became harder and tougher. On October 8th, or 24 days after it was first treated, the meat was in the same condition. There was only a slight meaty smell, not disagreeable, and there was nothing of a

putrefactive character, and the solution appears so far to have preserved the meat from putrefactive changes.

TABLE II.

| —            |   |   |   | Meat Untreated.   | Meat treated with Health-Guard. |
|--------------|---|---|---|-------------------|---------------------------------|
| After 2 days | - | - | - | Moist and flabby  | Dry. Dark colour.               |
| " 3 days     | - | - | - | Sour.             | Do. Do.                         |
| " 4 days     | - | - | - | Quite decomposed. | Do. Do.                         |
| " 7 days     | - | - | - | —                 | One or two small moulds.        |
| " 14 days    | - | - | - | —                 | Very dry and dark. Quite sweet. |
| " 21 days    | - | - | - | —                 | Same condition.                 |
| " 24 days    | - | - | - | —                 | Dry and hard. No decomposition. |

*Practical Application with Water.*

A small quantity of urine was added to a clean upland surface water and this solution was experimented on.

To two litres '5 of a gramme of Health-Guard was added and allowed to stand for 24 hours.

The results of this analysis are given in Table III.

TABLE III.

| —                |   | (a.)    | (b.)    | —                  |   | (a.)   | (b.)   |
|------------------|---|---------|---------|--------------------|---|--------|--------|
| Volatile matter  | - | 3'8000  | 4'7000  | Organic oxygen     | - | 0'2640 | 0'7000 |
| Chlorine         | - | 2'8000  | 2'9000  | Free ammonia       | - | 0'0264 | 0'0264 |
| Calcium carb     | - | 0'3333  | 0'3333  | Albuminoid ammonia | - | 0'0440 | 0'0528 |
| Fixed hard salts | - | 4'5000  | 5'0000  | Nitric acid        | - | 5'3742 | 3'9227 |
| Other Substances | - | 0'0677  | 14'5867 | Nitric acid        | - | None.  | 0'3320 |
| Total solids     | - | 11'5000 | 27'5000 | Total nitrogen     | - | 1'2134 | 0'9836 |

*Hardness.*

|           | (a.) | (b.) |
|-----------|------|------|
| Total     | 5'00 | 5'50 |
| Fixed     | 4'50 | 5'00 |
| Removable | 0'50 | 0'50 |

N.B. (a.)—Solution without Health-Guard.

(b.)—,, with Health-Guard.

As a purifier of water much cannot be said. It appears to exert no beneficial influence on organic matter, and does not favour complete oxidation. On the other hand, the tendency appears for it to de-oxidise nitrates into nitrites, by no means a favourable change.

*Practical Application with Urine.*

Two per cent. was added to a sample of urine, and this remained quite free from decomposition for six days.

*Remarks.*

The action of this compound on meat and milk is very good, but with the latter it is not superior to "Preservitas," reported on last year. With meat

its action is very much better. Its power as a water purifier is unsatisfactory, and it appears of little use for this purpose.

The general consensus of opinion is against the use of boric and salicylic acids as preservatives for food supplies.

Food to which these substances have been added is liable to cause gastric derangement, and its use has been prohibited in all contracts for supplies to the German Navy.

**REPORT on samples of Deposit under Floors, Wall Plaster, and Pugging under Floors from Royal Square, Royal Barracks, Dublin.**

No. I. Deposit under floor from C house, 6 room : appeared to be dry soil, with pieces of lime, shavings of wood, the bodies of two bugs, and some hairy and flocculent material.

No. II. Deposit under floor from D house, 3 room : soil more lumpy than No. I., with some lime, shavings, and hairy stuff.

No. III. Wall plaster from C house, 6 room : plaster and hair.

No. IV. Wall plaster from D house, 3 room : plaster and hair.

No. V. Pugging from under floor of C house, 6 room : earthy material, with hair, string, paper, and miscellaneous debris.

No. VI. Pugging from under floor of D house, 3 room : same as No. V.

*Chemical Analysis.*

¶ About five grammes of the material were taken in each case, dried at a temperature of 212° F., then incinerated ; the ash was then dissolved as far as possible in 100 c.c.'s distilled water, and the soluble portion tested qualitatively.

|                                 | No. 1.   | No. 2.   | No. 3.   | No. 4.   |
|---------------------------------|----------|----------|----------|----------|
| Moisture - - - - -              | 3·20     | 4·70     | 1·866    | 2·949    |
| Volatile (organic) matter - - - | 26·04    | 30·90    | 9·384    | 14·861   |
| Mineral residuo - - - - -       | 70·76    | 64·40    | 88·750   | 82·190   |
|                                 | 100·00   | 100·00   | 100·000  | 100·000  |
| Lime - - - - -                  | Copious. | Copious. | Copious. | Copious. |
| Chloride - - - - -              | Do.      | Do.      | Trace.   | Present. |
| Sulphuric acid - - - - -        | Do.      | Do.      | Present. | Do.      |
| Phosphoric acid - - - - -       | ?        | Present. | Trace.   | Absent.  |
| Ammonia - - - - -               | Copious. | Absent.  | Absent.  | Do.      |
| Nitric acid - - - - -           | Do.      | Copious. | Copious. | Copious. |
| Nitrous acid - - - - -          | Do.      | Do.      | Do.      | Do.      |

Nos. V. and VI. consisted of material of such a heterogeneous character that it was impossible to make a chemical analysis that would be fairly applicable to the whole.



*Cultivation Experiments.*

Ten grammes of the substance were taken out of the jar in which it was sent with a sterilised spatula, weighed quickly on a clean filter paper, and introduced into a flask containing 200 c.c.'s of distilled water that had been sterilised by boiling for several minutes on two successive days, the mouth being plugged with cotton wool. The soil and water were well shaken up several times, and the mixture allowed to settle.

Of this 5 c.c. was introduced by a sterilised pipette into a tube of liquefied nutrient gelatine, and well mixed therewith. Into this a sterilised platinum needle was dipped, and then introduced into another tube of liquefied gelatine; this was done three times. From the second tube thus inoculated a plate cultivation was made, and the growths that took place noted at short intervals.

## No. I.

After three days innumerable dots appeared.

After six days, in addition to the minute dots, numerous small colonies appeared; many of the dots showed a yellow tinge; one mould.

After nine days the yellow dots became of an orange colour; larger yellow colonies also appeared.

After 14 days there was slight liquefaction. At the end of one month there was not much liquefaction, the principal growths being minute dots or colonies, either whitish, yellow, or orange coloured, with several other kinds of colonies.

## No. II.

Very much the same appearance as No. I. Innumerable dots appeared after three days. After five days several kinds of colonies in addition, and a few moulds.

The appearance of orange-yellow dots was not noted until after 14 days. At the same time there was some slight liquefaction. At the end of one month the appearances were similar to those of No. I.

No cultivations were made of Nos. III. and IV. samples of wall plaster.

## No. V.

After four days some liquefying colonies and innumerable dots.

After seven days some increase in liquefaction, but not much change.

After 11 days many of the dots showed colouration, some yellow, some reddish.

After 27 days entire liquefaction of the plate.

## No. VI.

After four days two liquefying colonies, very numerous dots, and a few moulds.

After 11 days very little change.

After 27 days slight liquefaction; several sorts of colonies.

After six weeks nearly all liquefied.

These experiments show that this material contains a large amount of organic matter, including numbers of spores, as shown by the cultivations made. It is difficult to say if these exceed the number found in ordinary pugging as there are no data to make a comparison with. The material is certainly a dirty one.

## BACTERIAL EXAMINATION OF DRINKING WATER.

The same plan as described in last year's report was adopted in carrying out the bacteriological examination of water this year. As yet no definite conclusions can be drawn from the results. Since Koch's discovery of the cholera

*bacillus* many have laboured hard on this method, which at first appeared likely to afford information that chemical analyses fails to give. In fact some analysts (Plagge and Proskauer) place extremely little reliance on any opinions formed on the chemical examination of water. There is no doubt that by accumulating facts a bacteriological examination may in the near future prove a useful adjunct to chemical analysis.

According to Koch one cubic centimetre of a normal water should contain less than 300 germs. Plagge and Proskauer only allow 50 to 150, and the Swiss Society of Analytical Chemists have fixed on the latter number.

It is obviously impossible to condemn any sample of water on the mere number of germs it contains unless we are able to differentiate between those that are innocuous and those that are not. Later researches have failed to detect the enteric bacilli in water, and Cramer, in his report on the water supply Zurich, is of opinion that once the typhoid germ has left the human body it is as yet impossible to detect it.

Wolffhügel and Riedel state that the number of micro-organisms found is influenced by the temperature.

One sample when fresh taken stood the test all right, but after it had been kept for a short time in a room it was found to be dangerous to life.

With so many opposite views it is evident no safe conclusion can as yet be drawn; it is only, however, by studying the conditions favourable to the development and growth of these micro-organisms, and by carefully recording facts observed, that we can ever hope to arrive at any practical conclusions.

#### REPORT ON BACTERIAL CULTIVATION FROM DRINKING WATER, by Surgeon A. M. DAVIES, D.P.H., Assistant Professor of Hygiene.

The method of cultivation pursued has been that of Koch, consisting of plate cultivations in nutrient gelatine. The medium employed and method of procedure have been the same as in the previous year, described in Appendix No. I., Army Medical Department Report for 1887. One alteration has been made; half a cubic centimetre of water, instead of one cubic centimetre, has been the quantity used for each cultivation.

#### *Summary.*

The total number of samples of water cultivated during the past year was 57.

Of these 55 yielded marked bacterial growth.

In 52 liquefaction of the gelatine was noted; slight in 9 cases; considerable, extensive, or nearly complete in 43 cases.

Liquefaction appeared as early as the end of the third day in 8 cases; after 4 days, in 9 cases; and after 5 days, in 20 cases. Of these, 37 cases of speedy liquefaction, 18 occurred in the months from October to March, and were therefore probably not attributable to the warmth of the room. In 21 cases out of the 52 there was considerable liquefaction after 6 or 7 days.

Of the total number of 57 cases, there were but 2 that yielded either no growth at all, or only the very slightest (which might be attributed to accidental contamination) after many days.

In 6 cases, no growth of any kind had developed after either 4 or 5 days.

Taking these two groups of samples, and comparing the chemical constitution of the waters with their behaviour to the cultivation test, it is found that—

- (1.) In the group of 6 cases showing no appearance of growth after 4 or 5 days, in 4 instances the water was chemically pure; in one instance, though free from organic contamination, it was considered unfit for drinking from excess of hardness, and in the 6th instance, the water was the effluent from a sewage farm.

- (2.) In the group of 37 cases of liquefaction appearing after 4 or 5 days, in 18 instances the water was chemically bad, in 14 it was chemically good, in 3 doubtful, and in 2, though chemically pure, the microscopic appearances led to its condemnation.

Taking a group of 11 waters appearing to be chemically pure, as shown by the chlorine, free and albuminoid ammonia, in 4 cases there was very slight bacterial growth, in 4 cases there was considerable liquefaction, and in the remaining 3 cases liquefaction occurred, though not to any great extent.

These observations, therefore, do not seem to show any definite connexion between the goodness or badness of a water from a chemical aspect, and the presence or absence of bacterial growth or liquefaction.

In 9 instances, where two or more samples of water have been drawn at the same time, forwarded from the same place on the same day, and examined chemically and by cultivations simultaneously, there have been opportunities of comparing these two methods of analysis.

- (a.) Two samples from Hythe (Nos. 1 and 2): Organic oxygen, free and albuminoid ammonia, and nitric acid, all slightly greater in No. 1 than in No. 2, chlorine and hardness being the same; bacterial growth was somewhat quicker and decidedly more extensive in No. 1.
- (b.) Two samples from Lydd (4 and 5): Organic oxygen, free and albuminoid ammonia, and nitric acid, all slightly greater in No. 4 than in No. 5; chlorine and hardness being almost the same; bacterial growth was rather more marked in No. 4.
- (c.) Three samples from Weedon (7, 8, 9): All chemically fairly pure, but No. 9 showed rather less free and albuminoid ammonia; bacterial growth slight in all; in No. 9 entirely absent.
- (d.) Two samples from Christchurch (20 and 21): General chemical characters similar, but much more free ammonia in No. 20; bacterial growth almost identical in the two.
- (e.) Four samples from Christchurch (23-26): Nos. 23 and 24 almost exactly similar in chemical composition and in bacterial characters (slight growth and liquefaction).  
     In No. 25, less organic oxygen and albuminoid ammonia; liquefaction absent.  
     In No. 26, considerable more organic oxygen, albuminoid ammonia, nitric acid, and hardness; some free ammonia (absent in the other samples); bacterial growth and liquefaction appeared earlier, and were much more extensive.
- (f.) Two samples from Lydd (C. and F., 30 and 33); a general resemblance chemically, but less organic oxygen and albuminoid ammonia in No. 33; bacterial growth much less, and liquefaction absent in the latter.
- (g.) Four samples from Caterham (34-37); chemical characters and bacterial growth almost identical.
- (h.) Three samples from Portland (52, 53, 54); chlorine, nitric acid, and hardness the same in all; organic oxygen much the largest in 53, albuminoid ammonia much the largest in 54, which also contains a large amount of free ammonia (absent in the others); liquefaction much more rapid and extensive in 52 than in the other two samples.
- (i.) Two samples from Lydd (56 and 57); more albuminoid ammonia and hardness, much more nitric acid, but less organic oxygen in No. 57; bacterial growth and liquefaction much more marked in this one.

In these 24 examples, the indications given by chemical analysis and by bacterial cultivation (considered relatively) were concordant in 21 cases; in only 3 (Nos. 52, 53, 54) were the bacterial characters opposed to the chemical composition. The albuminoid ammonia and organic oxygen appear to hold some general relation with the amount of bacterial growth and liquefaction; that is, in two waters of a generally similar chemical composition, but in one

of which there is more albuminoid ammonia and organic oxygen; probably there will be a greater growth of bacteria, especially of the liquefying varieties. This is what might be expected, indicating more organic contamination.

With regard to the effect of length of time in storing the water, as some of these samples were sent from a considerable distance, many days elapsed sometimes before the examination.

Thirty-two samples were kept 15 days or more, of which 26, or 84 per cent., liquefied.

Ten samples were kept 10 days or less, of which nine, or 90 per cent., liquefied.

Fifteen samples were kept between 11 and 14 days, of which 12, or 80 per cent., liquefied.

Length of storage, therefore, within these limits does not appear to have had any effect one way or other on the occurrence of liquefaction; this agrees with the experience of the previous year.

As regards the source of the samples of water, whether from deep or shallow wells or running streams, no relationship could be traced between this and the amount or rapidity of bacterial growth.

#### REMARKS.

Since attention has been drawn within the last few years to the study of the micro-organisms present in drinking water, some observers have endeavoured to make a quantitative estimation of the germs present, i.e., to count their numbers; others have sought to distinguish between the different kinds that are found, and so make a *qualitative* examination.

Although the numerical method is the one that is usually adopted in this country, and that has received the sanction of some high authorities, it has not been practised in this laboratory, and for the following reasons: First, it has been demonstrated that organisms under favourable circumstances rapidly increase and multiply in water; in order, therefore, to accurately estimate the number present in any given sample, the examination should be made immediately, inasmuch as after a few days, even after a few hours, there may have taken place an enormous multiplication of the germs originally present. Under the ordinary circumstances of water analysis this is impracticable; an interval of time elapses and must elapse between the taking of the sample and its arrival in the laboratory. If this interval were always the same a useful comparison between different samples of water might still be made; but where this is not the case, as in the present series of observations on waters coming from all parts of England, some from Scotland and Ireland, it does not appear that any useful information would be gained by attempting to number the micro-organisms present. This would seem only to be of value where observations are constantly being made on some one given water supply, of which samples can be taken under precisely similar conditions and examined after exactly the same interval of time; a series of such observations, if showing fluctuations in the number present, might furnish important indications.

Secondly, temperature has a great influence on the growth and multiplication of micro-organisms; a sample of water yielding but a small number in winter would probably in summer under similar conditions of storage and after an equal length of time yield a much greater number; comparison between different samples of water would therefore be difficult and probably misleading.

Thirdly, although it is generally assumed that the number of colonies that appear in the gelatine represent the number of germs or organisms in the water, this is not proved. Doubtless, one germ will not produce more than one colony; but each colony need not necessarily be the product of only one germ; many may have cohered together to form one colony, and in some species this cohesion may be greater or more frequent than in others; a fallacy is thus introduced that at present cannot be avoided. A colony is often seen to be "compound," i.e., made up of more than one kind of growth, therefore indicating its origin from at least two germs; but a colony produced by

two germs of the same kind would probably not differ in anything, except, perhaps, size, from that resulting from an individual isolated germ.

Lastly, it may be admitted that "the exact numeration of an immense quantity of bacteria has no more interest than the counting of the leaves in a forest, and has no particular value from a scientific or hygienic point of view. It is quite enough to know that the number is very great."—*de Mulpert-Newville*.

Some endeavour has been made to differentiate the various kinds of bacteria present in the waters. This is attended with much difficulty, and hitherto but little progress has been made in the study either in this country or abroad, although in Germany especially much valuable work has been done by several observers. The method by plate cultivations in gelatine is open to the obvious objection that there is no proof that it is a suitable nutrient medium for all the germs that may exist in the water, and that consequently it does not furnish complete information as to the varieties that may be present. Without in any way seeking to minimise this objection, it may be assumed that a large number, and probably the great majority, do find in it a suitable pabulum; and at any rate a comparison may be drawn between different samples of water if exposed to the same conditions of cultivation; the knowledge gained will not be complete, but if relatively accurate it may be valuable.

The first object to be attained is to be able to distinguish between those organisms that belong to and grow in waters naturally from those that find their way into the waters as it were accidentally. The former group of normal aquatic bacteria are, as far as our present knowledge extends, quite harmless: among the latter introduced bacteria would be included what are now considered the specific agents in producing anthrax, tuberculosis, enteric fever, and other diseases. Unfortunately, it is a matter of the greatest difficulty in many cases to distinguish the important pathogenic forms from the harmless and unimportant normal bacterial flora (if such a term may be allowed) of the water. The bacillus of enteric fever (Eberth's bacillus), for instance, is exceedingly difficult of detection on account of the great resemblance it bears to other and harmless forms. It is a question, moreover, not to be lost sight of whether these normal, so-called harmless forms may not under certain conditions undergo further developments, or take on other characters, and so become pathogenic. There are now several species of such bacteria that are well established; there are large numbers of other forms that are more or less associated with disease, and standing in a more or less doubtful position; besides these there is a crowd of organisms met with in soil, air, and water about which little is known. There does not seem to be any broad line of demarcation between the pathogenic and the harmless bacteria as far as their behaviour in nutrient media or microscopic appearances are concerned. In order, therefore, to certify the presence or absence of any established pathogenic species, such as that of anthrax or enteric fever in a sample of water, it is necessary to apply those cultivation tests in various media, that are known to distinguish these established species, to all the forms met with in the sample.

The characters of the colonies that grow in the nutrient media do not appear hitherto to have been described with much minuteness; it seems probable that the habit of growth of the different species would be constant, and that, therefore, a systematic description of the naked eye characters of the different kinds of colonies might afford valuable indications.

It is suggested that colonies should be described according to the following characters:—

A. Those that liquefy the gelatine:—

Their colour, presence or absence of a deposit and its colour, presence or absence of a clear areola round the liquefied part, &c.

B. Those that do not liquefy the gelatine:—

I. *Colour*. This is generally whitish or yellowish; it may be milky or translucent (colour absent); pale, bright or deep yellow, or orange, &c.; occasionally reddish (pink, rose-coloured), and rarely of a blue or violet tinge.

- II. *Form*. This may be circular, nearly circular, oval, or more or less irregular or branching. The *margin* of the colony may be smooth or crenate, &c., irrespective of its general form.
- III. *Disposition*. The colonies may be raised above the surface of the gelatine, or they may be flat, spreading superficially over its surface; or they may be excavated in its substance, or cup-shaped.
- IV. *Surface*. This may be either moist or dry, shining or dull, or waxy-looking, &c.
- V. *Peculiarities*. Such as a granular appearance, especial hardness or softness of the growth, &c.

The record of appearances in plate cultivations should include at least these characters, together with any others that might be present in addition. They are all such as are obvious to the naked eye, or with a simple lens of low power.

For instance, the form of colony that has appeared most frequently in the cultivations during the past year may be described as "Non-liquefying, milky, sub-circular, raised, moist, shining."

If to this be added a description of the appearance of the growth in pure cultivation in gelatine tubes, on agar agar, and on potatoe, as well as of the microscopic characters of the organism, we have an assemblage of facts that would probably be sufficient to differentiate the organism: inoculation into living animals of various kinds is necessary of course to determine whether it be pathogenic or not.

When large numbers of samples of water have to be analysed, most of which contain several kinds of colonies, such an extended method of examination may be practically impossible; at any rate, the naked eye characters of the colonies should be accurately recorded, as well as the microscopic appearances of the organisms.

Some progress in this direction has been made during the past year in this laboratory, which it is hoped may eventually lead to some result.

TABLE SHOWING RESULTS OF CULTIVATIONS FROM SAMPLES OF DRINKING WATER.

| No. | Date.   | Source.            | After two Days. | After three Days. | After four Days.                                                | After five Days.                            | After six Days.                 | After seven Days.                            | After eight to ten Days. | —                                                                                        |
|-----|---------|--------------------|-----------------|-------------------|-----------------------------------------------------------------|---------------------------------------------|---------------------------------|----------------------------------------------|--------------------------|------------------------------------------------------------------------------------------|
| 1   | 21.3.89 | Hythe.—No. I.      | —               | —                 | Several milky dots, one or two semi-liquefying.                 | Some liquefaction, numerous other colonies. | —                               | Same -                                       | Eight days; same.        | Eleven days; considerable liquefaction; Fifteen days; very extensive liquefaction.       |
| 2   | "       | Hythe.—No. II.     | —               | —                 | NIL                                                             | One liquefying and a few other colonies.    | —                               | Several liquefying and a few other colonies. | Eight days; same.        | Eleven days; some liquefaction. Fifteen days; same.                                      |
| 3   | 22.3.89 | Weedon.—B.         | —               | NIL               | A few dots                                                      | —                                           | —                               | Some liquefaction.                           | —                        | Eleven days; extensive liquefaction.                                                     |
| 4   | "       | Lydd.—No. I.       | —               | NIL               | Numerous small colonies, some liquefying. A few small colonies. | —                                           | —                               | Nearly all liquefied.                        | —                        | —                                                                                        |
| 5   | "       | Lydd.—No. II.      | —               | NIL               | —                                                               | —                                           | —                               | Nearly all liquefied.                        | —                        | —                                                                                        |
| 6   | "       | Curragh.—Hare Park | —               | NIL               | —                                                               | —                                           | —                               | Two liquefying colonies.                     | —                        | —                                                                                        |
| 7   | 2.4.89  | Weedon.—A.         | NIL.            | —                 | —                                                               | —                                           | A few colonies.                 | One liquefying colony.                       | —                        | Eleven days; extensive liquefaction. Thirteen days; several colonies; two liquefactions. |
| 8   | "       | Weedon.—B.         | NIL.            | —                 | —                                                               | —                                           | A few colonies; one liquefying. | Same -                                       | —                        | Thirteen days; several colonies; two liquefactions.                                      |
| 9   | "       | Weedon.—C.         | NIL.            | —                 | —                                                               | —                                           | A few colonies.                 | Same -                                       | —                        | Thirteen days; several colonies; two liquefactions.                                      |

## Cultivation Experiments—continued.

| No. | Date.   | Source.                           | After two Days.    | After three Days.                             | After four Days.                                | After five Days.                                                             | After six Days.                          | After seven Days.                    | After eight to ten Days. | —                                                                       |
|-----|---------|-----------------------------------|--------------------|-----------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------|-------------------------------------------------------------------------|
| 10  | 23.4.89 | Golden Hill Fort, I.W.—No. I.     | —                  | Innumerable milky dots.                       | —                                               | Innumerable dots; also innumerable small liquefying colonies. One milky dot. | —                                        | Completely liquefied.                | —                        | —                                                                       |
| 11  | "       | Golden Hill Fort, I.W.—No. II.    | —                  | Nil.                                          | —                                               | —                                                                            | —                                        | One liquefying and one other colony. | —                        | Twenty-five days; various non-liquefying and a few liquefying colonies. |
| 12  | 5.6.89  | Newhaven . . .                    | —                  | One liquefying and a few other colonies.      | —                                               | Same . . .                                                                   | —                                        | —                                    | —                        | —                                                                       |
| 13  | 8.7.89  | Bury, Lancashire . .              | Numerous colonies. | A few liquefying and numerous other colonies. | —                                               | Considerable liquefaction.                                                   | —                                        | —                                    | —                        | —                                                                       |
| 14  | 19.7.89 | Inverness.—No. I. . .             | —                  | Several liquefying and a few other colonies.  | Liquefaction increasing.                        | Nearly all liquefied.                                                        | —                                        | —                                    | —                        | —                                                                       |
| 15  | "       | Inverness.—No. II. . .            | —                  | A few liquefying and numerous other colonies. | Liquefaction increasing.                        | Extensive liquefaction.                                                      | —                                        | —                                    | —                        | —                                                                       |
| 16  | 23.7.89 | Madeley . . .                     | Nil.               | One colony and a few dots.                    | Same . . .                                      | —                                                                            | One liquefying and a few other colonies. | —                                    | —                        | —                                                                       |
| 17  | 8.8.89  | St. Helena.—Ladder Hill Barracks. | One colony . .     | —                                             | Several liquefying and numerous other colonies. | Very extensive liquefaction.                                                 | —                                        | Almost entire liquefaction.          | —                        | —                                                                       |



Cultivation Experiments—continued.

| No. | Date.   | Source.                  | After two Days.               | After three Days.                       | After four Days.                                       | After five Days.                             | After six Days.        | After seven Days.                          | After eight to ten Days.               | —                                   |
|-----|---------|--------------------------|-------------------------------|-----------------------------------------|--------------------------------------------------------|----------------------------------------------|------------------------|--------------------------------------------|----------------------------------------|-------------------------------------|
| 18  | 8.8.89. | St. Helena.—Jamestown    | A few colonies                | —                                       | Several liquefying and numerous other colonies.        | Very extensive liquefaction.                 | —                      | Almost entire liquefaction.                | —                                      | —                                   |
| 19  | "       | Weedon.—Ordnance Row     | Several dots                  | —                                       | A few liquefying, several other colonies.              | —                                            | —                      | Liquefaction increasing.                   | Eight days; all liquefied.             | —                                   |
| 20  | 9.8.89  | Christchurch.—Filtered   | —                             | Numerous liquefying and other colonies. | Liquefaction increasing.                               | —                                            | Complete liquefaction. | —                                          | —                                      | —                                   |
| 21  | "       | Christchurch.—Unfiltered | —                             | A few liquefying and other colonies.    | Liquefaction increasing.                               | —                                            | Complete liquefaction. | —                                          | —                                      | —                                   |
| 22  | "       | Southampton.—Town supply | —                             | Two or three dots.                      | A few liquefying and other colonies.                   | —                                            | —                      | —                                          | Eight days; considerable liquefaction. | Eleven days; complete liquefaction. |
| 23  | 4.9.89  | Christchurch.—No. I.     | —                             | A few dots                              | —                                                      | A few liquefying and several other colonies. | —                      | Some liquefaction; several other colonies. | —                                      | —                                   |
| 24  | "       | Christchurch.—No. II.    | —                             | A few dots                              | —                                                      | A few liquefying and other colonies.         | —                      | Same                                       | —                                      | —                                   |
| 25  | "       | Christchurch.—No. III.   | —                             | A few dots                              | —                                                      | A few colonies; no liquefaction.             | —                      | Same                                       | —                                      | —                                   |
| 26  | 5.9.89  | Christchurch.—No. IV.    | Very numerous small colonies. | —                                       | Considerable liquefaction and numerous other colonies. | —                                            | Nearly all liquefied.  | —                                          | —                                      | —                                   |

## Cultivation Experiments—continued.

| No. | Date.   | Source.        | After two Days. | After three Days.                             | After four Days.                     | After five Days.                                     | After six Days.               | After seven Days.                   | After eight to ten Days.                         | —                                                                                                        |
|-----|---------|----------------|-----------------|-----------------------------------------------|--------------------------------------|------------------------------------------------------|-------------------------------|-------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 27  | 5.9.89  | Blaey Camp     | Nil.            | —                                             | One dot                              | —                                                    | Several dots                  | —                                   | Eight days: a few liquefying and other colonies. | Eighteen days: considerable liquefaction and other colonies.                                             |
| 28  | 13.9.89 | Lydd.—A.       | —               | A few colonies, no liquefaction.              | —                                    | Two liquefying and numerous other colonies.          | —                             | —                                   | —                                                | Twelve days: not much change. Twenty-four days: liquefaction slight. Twelve days: complete liquefaction. |
| 29  | "       | Lydd.—B.       | —               | A few liquefying and numerous other colonies. | —                                    | Numerous liquefying and other colonies.              | —                             | —                                   | —                                                | Twelve days: complete liquefaction.                                                                      |
| 30  | "       | Lydd.—C.       | —               | A few liquefying and numerous other colonies. | —                                    | Same                                                 | —                             | —                                   | —                                                | Twelve days: complete liquefaction.                                                                      |
| 31  | "       | Lydd.—D.       | —               | —                                             | —                                    | Very numerous liquefying and several other colonies. | —                             | Nearly all liquefied.               | —                                                | —                                                                                                        |
| 32  | "       | Lydd.—E.       | —               | —                                             | —                                    | Two or three liquefying and several other colonies.  | —                             | Liquefaction increasing.            | —                                                | —                                                                                                        |
| 33  | 18.9.89 | Lydd.—F.       | —               | —                                             | —                                    | One or two colonies; no liquefaction.                | —                             | Very few colonies; no liquefaction. | —                                                | —                                                                                                        |
| 34  | 8.10.89 | Caterham.—A 1. | —               | A few dots                                    | A few liquefying and other colonies. | —                                                    | Numerous liquefying colonies. | —                                   | —                                                | Fourteen days: nearly all liquefied.                                                                     |

## Cultivation Experiments—continued.

| No. | Date.    | Source.                                           | After two Days. | After three Days. | After four Days.                                   | After five Days. | After six Days.                               | After seven Days.                          | After eight to ten Days.            | —                                                                                          |
|-----|----------|---------------------------------------------------|-----------------|-------------------|----------------------------------------------------|------------------|-----------------------------------------------|--------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------|
| 35  | 10.59    | Caterham.—A 2.                                    | —               | Nil.              | A few dots                                         | —                | A few liquefying and other colonies.          | —                                          | —                                   | Fourteen days: nearly all liquefied.                                                       |
| 36  | "        | Caterham.—A 3.                                    | —               | Several dots      | A few liquefying and numerous other colonies.      | —                | Same                                          | —                                          | —                                   | Fourteen days: nearly all liquefied.                                                       |
| 37  | "        | Caterham.—B 1.                                    | —               | A few dots        | One or two liquefying and numerous other colonies. | —                | Numerous liquefying and other colonies.       | —                                          | —                                   | Fourteen days: nearly all liquefied.                                                       |
| 38  | 14.10.59 | Dublin, Richmond Barracks.—Subsoil water, No. I.  | Nil.            | Several dots      | —                                                  | —                | A few liquefying and numerous other colonies. | —                                          | Nine days: liquefaction increasing. | Twenty - two days: not all liquefied.                                                      |
| 39  | "        | Dublin, Richmond Barracks.—Subsoil water, No. II. | Nil.            | Nil.              | —                                                  | —                | Numerous colonies; no liquefaction.           | —                                          | Nine days: two liquefying colonies. | Twenty - two days: very numerous colonies and some liquefaction.                           |
| 40  | 18.10.59 | Alderney.—No. I.                                  | —               | A few dots        | —                                                  | —                | Numerous liquefying and a few other colonies. | —                                          | —                                   | Eleven days: very considerable liquefaction.                                               |
| 41  | "        | Alderney.—No. II.                                 | —               | A few dots        | —                                                  | —                | Very numerous liquefying colonies.            | Considerable liquefaction; red coloration. | —                                   | Thirteen days: nearly all liquefied; strong odour.                                         |
| 43  | "        | Alderney.—No. III.                                | —               | Numerous dots     | —                                                  | —                | Nearly all liquefied.                         | —                                          | —                                   | Eleven days: nearly all liquefied. Thirteen days: very nearly all liquefied; strong odour. |

## Cultivation Experiments—continued.

| No. | Date.    | Source.                              | After two Days.   | After three Days. | After four Days. | After five Days.                                | After six Days. | After seven Days. | After eight to ten Days.                 | —                                                                                       |
|-----|----------|--------------------------------------|-------------------|-------------------|------------------|-------------------------------------------------|-----------------|-------------------|------------------------------------------|-----------------------------------------------------------------------------------------|
| 43  | 13.11.88 | Lydd.—G.                             | Imnumerable dots. | —                 | —                | Some liquefaction.                              | —               | —                 | Eight days; nearly all liquefied.        | —                                                                                       |
| 44  | "        | Lydd.—H.                             | Some dots         | —                 | —                | Some liquefying and numerous other colonies.    | —               | —                 | Eight days; considerable liquefaction.   | Twenty days; nearly all liquefied.                                                      |
| 45  | "        | Lydd.—I.                             | Nil.              | —                 | —                | Some liquefying and numerous other colonies.    | —               | —                 | Eight days; same.                        | Twenty days; nearly all liquefied.                                                      |
| 46  | "        | Yarmouth.—I. W.                      | Nil.              | —                 | —                | A few liquefying and numerous other colonies.   | —               | —                 | Nine days; numerous liquefying colonies. | —                                                                                       |
| 47  | "        | Weedon.—Q.                           | Nil.              | —                 | —                | Numerous liquefying and several other colonies. | —               | —                 | Nine days; very nearly all liquefied.    | —                                                                                       |
| 48  | "        | Weedon.—E.                           | Nil.              | —                 | —                | A few liquefying and numerous other colonies.   | —               | —                 | Nine days; liquefaction increasing.      | —                                                                                       |
| 49  | 20.11.88 | Blackwater River.—Above Sewage Farm. | Nil.              | —                 | —                | Several liquefying and other colonies.          | —               | —                 | —                                        | Nineteen days; nearly all liquefied.                                                    |
| 50  | "        | Blackwater River.—Below Sewage Farm. | Nil.              | —                 | —                | A few liquefying and other colonies.            | —               | —                 | —                                        | Nineteen days; very considerable liquefaction.                                          |
| 51  | "        | Effluent from Sewage Farm, filtered. | Nil.              | —                 | —                | Nil.                                            | —               | —                 | —                                        | Nineteen days; one or two colonies; no liquefaction; forty-three days; no liquefaction. |

## Cultivation Experiments—continued.

| No. | Date.    | Source.                 | After two Days. | After three Days. | After four Days. | After five Days.                                                              | After six Days.                                         | After seven Days.                        | After eight to ten Days.                                             | —                                                                                        |
|-----|----------|-------------------------|-----------------|-------------------|------------------|-------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 52  | 12.12.89 | Portland.—No. I.        | —               | —                 | —                | Innumerable colonies; no liquefaction. A few dots, and one liquefying colony. | Considerable liquefaction. Several liquefying colonies. | —                                        | Ten days; completely liquefied. Ten days; considerable liquefaction. | —                                                                                        |
| 53  | 12.12.89 | Portland.—No. II.       | —               | —                 | —                | —                                                                             | —                                                       | —                                        | —                                                                    | Twenty days; considerable liquefaction. Thirty - two days; almost complete liquefaction. |
| 54  | 7.1.90   | Portland.—Verne Citadel | —               | A few dots        | —                | —                                                                             | Several liquefying and other colonies.                  | —                                        | Eight days; liquefaction increasing.                                 | —                                                                                        |
| 55  | 13.2.90  | Lydd.—No. I.            | —               | —                 | —                | Innumerable dots.                                                             | —                                                       | Innumerable colonies; some liquefaction. | —                                                                    | Eleven days; numerous liquefying colonies.                                               |
| 56  | "        | Lydd.—No. II.           | —               | —                 | —                | Some dots                                                                     | —                                                       | Very numerous colonies.                  | —                                                                    | Eleven days; numerous liquefying colonies.                                               |
| 57  | "        | Lydd.—No. III.          | —               | —                 | —                | Nil.                                                                          | —                                                       | One dot                                  | Eight days; two dots.                                                | Eleven days; a few colonies; no liquefaction. Twenty-eight days; no liquefaction.        |

## APPENDIX No. II.

## LIST OF OPERATIONS PERFORMED AT THE ROYAL VICTORIA HOSPITAL, NETLEY, DURING THE YEAR 1889, WITH SHORT ABSTRACTS OF THE MOST IMPORTANT CASES.

By BRIGADE-SURGEON C. H. Y. GODWIN, Medical Staff, Assistant Professor of Military Surgery.

| Operations.                                              | Number of Cases. | Diseases.                             | Results.               |                       |         |       | Remarks. |
|----------------------------------------------------------|------------------|---------------------------------------|------------------------|-----------------------|---------|-------|----------|
|                                                          |                  |                                       | Completely successful. | Partially successful. | Failed. | Died. |          |
| <b>HEAD AND NECK.</b>                                    |                  |                                       |                        |                       |         |       |          |
| I. Sinus laid open -                                     | 1                | Necrosis, lower jaw.                  | 1                      | —                     | —       | —     |          |
| II. Sequestrotomy                                        | 3                | Do. do.                               | —                      | —                     | —       | —     |          |
| III. Excision of eyeball.                                | 1                | Staphyloma (right eye).               | 1                      | —                     | —       | —     |          |
| IV. Do. do.                                              | 1                | Glaucoma (right eye).                 | 1                      | —                     | —       | —     |          |
| V. Do. do.                                               | 2                | Melano-sarcoma of eyeball.            | 2                      | —                     | —       | —     |          |
| VI. Excision of part of cyst wall.                       | 1                | Ranula - -                            | 1                      | —                     | —       | —     |          |
| VII. Removal by torsion.                                 | 1                | Polypus of nose -                     | —                      | 1                     | —       | —     |          |
| VIII. Plastic operation.                                 | 1                | Fistula in cheek -                    | 1                      | —                     | —       | —     |          |
| IX. Opening of abscess, below cervical fascia.           | 1                | Abscess of connective tissue of neck. | 1                      | —                     | —       | —     |          |
| <b>THORAX.</b>                                           |                  |                                       |                        |                       |         |       |          |
| I. Resection of rib                                      | 1                | Empyema - -                           | —                      | 1                     | —       | —     |          |
| <b>ABDOMEN.</b>                                          |                  |                                       |                        |                       |         |       |          |
| I. Opened by incision outside quadratus lumborum muscle. | 5                | Iliac and psoas abscess.              | —                      | 5                     | —       | —     |          |
| II. Opened by incision, and drained.                     | 4                | Hepatic abscess -                     | 4                      | —                     | —       | —     |          |
| III. Aspirated without finding pus.                      | 1                | Hepatitis - -                         | 1                      | —                     | —       | —     |          |
| <b>UPPER EXTREMITY.</b>                                  |                  |                                       |                        |                       |         |       |          |
| I. Sequestrotomy.                                        | 1                | Gunshot wound, left forearm.          | 1                      | —                     | —       | —     |          |
| II. Do. -                                                | 3                | Necrosis of clavicle.                 | 3                      | —                     | —       | —     |          |

| Operations.                                                                                | Number of Cases. | Diseases.                                | Results.               |                       |         |       | Remarks.                    |
|--------------------------------------------------------------------------------------------|------------------|------------------------------------------|------------------------|-----------------------|---------|-------|-----------------------------|
|                                                                                            |                  |                                          | Completely successful. | Partially successful. | Failed. | Died. |                             |
| UPPER EXTREMITY—<br><i>cont.</i>                                                           |                  |                                          |                        |                       |         |       |                             |
| III. Forcible movement.                                                                    | 1                | Fibrous ankylosis of fingers and wrist.  | —                      | 1                     | —       | —     |                             |
| IV. Amputation of index and middle fingers, right hand.                                    | 1                | Gunshot wound. fingers.                  | 1                      | —                     | —       | —     |                             |
| V. Necrosis last phalanx, second finger, right hand, removed.                              | 1                | Whitlow - -                              | 1                      | —                     | —       | —     |                             |
| VI. Fibrous adhesions broken down.                                                         | 1                | Ankylosis, left wrist.                   | —                      | 1                     | —       | —     |                             |
| Resection of tibia and fibula.                                                             | 1                | Badly united compound fracture of tibia. | —                      | 1                     | —       | —     | At present under treatment. |
| LOWER EXTREMITY.                                                                           |                  |                                          |                        |                       |         |       |                             |
| I. Excision of cuboid and part of astragalus.                                              | 1                | Tubercle of bones of tarsus.             | —                      | 1                     | —       | —     |                             |
| II. Scraping of pulpy granulations with Volkman's spoon, and insertion of drainage tubing. | 1                | Do. do.                                  | —                      | 1                     | —       | —     |                             |
| III. Fibrous adhesions broken down.                                                        | 1                | Ankylosis, knee joint.                   | —                      | —                     | 1       | —     |                             |
| GENITO-URINARY.                                                                            |                  |                                          |                        |                       |         |       |                             |
| I. Circumcision -                                                                          | 1                | Phimosis - -                             | 1                      | —                     | —       | —     |                             |
| II. Perineal section                                                                       | 1                | Urinary fistula -                        | 1                      | —                     | —       | —     |                             |
| RECTUM.                                                                                    |                  |                                          |                        |                       |         |       |                             |
| I. By division of sphincter; opening up collateral sinuses.                                | 4                | Fistula in ano -                         | 4                      | —                     | —       | —     |                             |
| II. By ligature (Allingham's).                                                             | 2                | Internal piles -                         | 2                      | —                     | —       | —     |                             |
| III. By nitric acid                                                                        | 1                | Do. do. -                                | 1                      | —                     | —       | —     |                             |
| VEINS.                                                                                     |                  |                                          |                        |                       |         |       |                             |
| I. Injection of carbolic acid.                                                             | 4                | Varix - -                                | 4                      | —                     | —       | —     |                             |
| Totals - -                                                                                 | 48               |                                          | 32                     | 15                    | 1       | —     |                             |

## NOTES ON THE MORE IMPORTANT CASES IN THE ABOVE TABLE.

**Hepatic Abscess.** Private G. D., aged 38, 1st West Riding Regiment, was invalided from Aden, and arrived at Netley on the 15th April 1889. He had a phthisical history, and stated that eight months before he had begun to suffer from pain in the hepatic region, which has been more or less continuous ever since. Whilst at Aden he suffered severely from "diarrhœa" and "melœna," lost flesh, became very weak and anæmic. On arrival at Netley he was found to be pale, sallow,

slightly yellowish and very emaciated; the right side of his chest did not expand so well as the left it bulged in lower part, dulness extended from the fifth rib in front to below the costal cartilage, over this dull area the breathing was very weak, the vocal fremitus was increased, and there were some friction sounds over fourth and fifth intercostal interspaces; he had also a slight muco-purulent expectoration. The liver extended three fingers' breadth below the costal margins on the right side and in epigastrium; there was tenderness over the whole hepatic region and bulging. The spleen was not enlarged. The temperature was ranging from 102° in the evening to 99° in the morning; no rigors. The pain increased and some redness and oedema appeared over the seventh and eighth ribs in the axillary line, accompanied by night sweats. On the 4th May an aspirator needle was introduced, and, finding pus, a bistourie was passed along the groove in the needle and free opening made in the seventh interspace. About 30 ozs. of curdled pus, bile, blood and broken-down liver tissue escaped, a large drainage tube was inserted and the wound dressed with "sal alembroth" wool. The cavity gradually contracted, and he left the hospital quite convalescent on the 12th July, at his own request, for his home.

Private J. B., aged 25, 2nd R. L. Regiment, was invalided from Kurrachee, and arrived at Netley on the 1st May 1889; he had been intemperate in habits, had suffered in 1888 from "congestion of the liver," for which he was ultimately invalided. On arrival he was found to be emaciated, anæmic, and had an anxious expression of countenance, the heart and lungs were normal, he had considerable pain and tenderness over the hepatic region, the liver was enlarged upward, and there was tympanitis over the upper part of the abdomen with slight diarrhoea, the stools being of a yellow, frothy description, the tongue was clean, he had little appetite but slept fairly well. On May 24th, at the request of the professor of medicine, the liver was tried in three different places with an aspirator needle, but no pus was found, a little blood only escaping. No untoward symptom followed this operation, on the contrary, he improved, and the liver became smaller. On the 19th June the note says: "Cannot now feel the liver below the ribs, he is improving daily." He left the hospital, at his own request, convalescent on the 21st June 1889.

Exploration for a suspected hepatic abscess.

Private W. N., 7th Hussars, aged 27, was invalided from India in January 1889, and arrived at Netley on the 25th April; he had suffered from "dysentery" for some time. Had an abscess in the liver opened in January last, which has continued to discharge ever since, he also was pale, thin, and weakly, the bowels were at this time regular, he had some tenderness near the wound, and the liver was slightly enlarged. On the 25th May, a narrow constricted sinus was freely opened up, and a drainage tube inserted between the ribs; the cavity now rapidly contracted, and he was discharged cured on the 25th July 1889.

Hepatic abscess.

Private A. H., 2nd Manchester Regiment, aged 25, was invalided from India in March 1889, and arrived at Netley on the 25th April. He stated that he had suffered from "fever," but never from "dysentery." He went into hospital in September 1888, with "congestion of the liver"; he became weak, anæmic, and had pain at times in the right side. The apex of the right lung at this time showed signs of consolidation. On the voyage home he commenced to spit up liver pus. On admission he had a frequent cough, and a troublesome expectoration of a reddish-brown colour, viscid, consisting of pus cells, mucous cells, and liver cells, with blood and granular matter. The lower part of the right chest moved very slightly, dulness extended from the sixth interspace down to five fingers' breadth below the ensiform cartilage, the tongue was small, bright red in colour, and raw at the tip, the liver was enlarged and tender on pressure; the spleen was slightly enlarged and tender; the bowels acted six or seven times daily; stools were of a most offensive character, but contained no pus, the whole of the abdomen was tender to the touch; he seemed to be steadily losing ground. On May 6th he passed a black, tarry motion. A swelling at this time began to form over the tenth and eleventh costal interspaces, which was tender, soft, and gave sense of fluctuation; since this commenced to form the expectoration lessened. On May 10th this swelling was opened, and found to be an abscess extending between the ribs and communicating with a large liver abscess; a free opening was now made into the liver cavity and a drainage tube inserted. The expectoration at once diminished and ceased altogether, the abscess gradually closed, and he left the hospital well on the 21st June 1889.

Hepatic abscess.



Hepatic abscess.

Private P. C., 2nd Gloucester Regiment, aged 32, invalided from Colaba in April, and arrived at Netley on 1st May. He said that he had suffered previously from "fever" but not from "dysentery"; had an attack of "hepatitis" when at Colaba with pain in the right side extending round the back and shoulders, was tender over liver, and the liver dulness became slightly increased, he had night sweats, and lost flesh. On admission at Netley he had great tenderness over hepatic region, especially on the right side, close to the lower border of the ribs; palpitation showed much enlargement of liver, with considerable swelling and slight œdema over the lower ribs; bowels were confined, temperature ranged at 100°; he could not lie on either side, had severe night sweats, appetite good.

On May 9th, an aspirator needle was inserted between the eighth and ninth ribs, slightly behind the axillary line, and between 30 and 40 ounces of chocolate-coloured pus were withdrawn. On the 15th May a free opening was made into the cavity, and a drainage tube inserted. The cavity gradually contracted and healed. He left the hospital on the 19th August quite cured.

Resection of tibia and fibula for ununited fracture, with great deformity.

Private J. C., 2nd Wilts Regiment, 36, when on the march in March 1888 was kicked by a camel, and sustained a simple, direct, comminuted fracture of the tibia; it was put up in splints for five or six weeks, and then a starch bandage was applied; some weeks afterwards it was taken down, and the following condition is recorded: "No shortening, ankle-joint almost immovable, foot œdematous from pressure on internal saphena vein by a large piece of callus on inner side of tibia." On September 4th he could only walk with difficulty, ankle-joint was stiff, and there was considerable deformity at the seat of fracture. For this he was invalided, and when at Deolali he fell and broke the leg again, the fracture was at this time "compound." He arrived at Netley on the 13th February 1889, when he was unable to walk without crutches on account of pain at the seat of fracture, there was considerable œdema of foot, with great deformity of the leg, due to an overlapping, non-united fracture of the tibia. On March 27th, 1889, an attempt was made to rectify this condition; a long incision was made over the seat of fracture, the ends of the bone were then forced out, after breaking down all fibrous adhesions, and the ends were sawn off squarely. A second incision was then made over the fibula, a piece of which was then removed by a chain saw, equal to that removed from the tibia. Herein was the difficulty of the operation, to make both bones come evenly together. The ends of the tibia were firmly wired together with silver wire. The bones came well together, and the leg was straight. The wound was dressed with iodoform gauze and sal alembroth wool, and the leg put upon a Lawrence's splint; the wound healed up readily enough, union quickly took place between the cut surfaces of the fibula, but osseous union between the ends of the tibia progressed very slowly. On September 20th the wire was removed as it seemed to be the cause of irritation to the skin. At the present time (March, 1890) the leg is up in water glass, he can put it to the ground, the foot does not swell, but he cannot bear much weight upon it. He remains still under treatment.

Plastic operation for fistulous opening in cheek.

Lance-Corporal F. K., 2nd Royal Irish Regiment, aged 24; arrived at Netley, on the 25th April 1889, having been invalided from India on account of the injuries inflicted on his face, by an attempt to kill himself by discharging a rifle into his mouth. He had a large fistulous opening on the left side of his face by the side of the nose, on a level with the lower edge of the left ala, which led into a common opening into the mouth and nostril. The upper lip was drawn up on the left side, the upper alveolus was completely destroyed, with the loss of teeth from the first incisor to the first molar inclusive. On the 17th August a plastic operation was undertaken to try and close the fistula. The soft parts were freely detached and dissected from the bone, the edges of the fistulous opening having been refreshed were brought together by sutures, which were then supported and strengthened by two hair lip pins, which were passed through the whole thickness of the cheek and upper lip. The opening closed up entirely, and the man left the hospital on the 6th November 1889, greatly benefited.

Melano sarcoma of eye enucleation.

Lance-Corporal D. B., 2nd S. W. B., aged 23, was invalided from Bareilly, North-West Provinces, India, in March 1889, on account of a tumour in the eye. In July 1888 he first was aware that his right eye was

ailing him. In December he was placed under treatment for a tumour growing behind the iris, and detaching it from its ciliary margin. It has steadily increased in size. He arrived at Netley on the 25th April, and a tumour, diagnosed as melano-sarcoma, was seen pushing forward through the iris, and separating the latter from its ciliary margin. A portion of the tumour could also be seen just coming forward at the pupillary margin of the iris. As no doubt existed as to the nature of the tumour, the eye was enucleated on the 7th June 1889. After the eyeball had been hardened in chromic acid, the sarcomatous nature of the tumour was clearly ascertained.

Colour Sergeant A. T., aged 29, 2nd K.O.S.B., a delicate-looking man, gave the following account:—In December 1888, when in action at Suakim, a shell struck the bank on which he was leaning and drove some fine sand into his left eye; for about a week after this the eye was inflamed and painful. At the end of May 1889, he noticed a black mark in the iris of the left eye, which increased in size, and his sight became impaired. On the 27th July he accompanied his regiment up the Nile to Assouan, where he experienced pain in the eye, which he attributed to the heat and glare of the sun, the iris at this time changed colour, becoming quite dark, and the sight was greatly impaired. On the 23rd August he was invalided home, on account of a new growth in the left eye, and arrived at Netley on the 23rd September 1889. His vision then was normal in the right eye, and  $\frac{20}{10}$  in the left; the conjunctiva and cornea of the left eye were clear, anterior chamber was diminished by protrusion forwards of the iris. Iris was discolored from being originally hazel to a deep brown, mottled with minute dark spots, the outer and lower quadrant being bulged forwards into the anterior chamber, apparently by a tumour situated behind that part of the iris; this protrusion was about the size of a split pea, of a dark brown colour, convex forwards, irregularly convex in shape, outer edge corresponding with the adjacent arc of the margin of the cornea. That portion of the iris immediately over the tumour appeared to be stretched out and thinned; the pupil was somewhat dilated and irregular in shape. Diagnosis, a malignant new growth of the melano sarcoma variety. Patient was seen by Mr. Nettleship at Moorfields, who confirmed this opinion. October 29th, the eye was enucleated; the wound soon healed, and he left the hospital for his home.

Melano-sarcoma,  
of eye.  
Enucleation.

The cases of liver abscess reported show very plainly the advantage of a free and bold treatment. In the four cases above detailed, improvement set in as soon as the abscess had been opened up, and especially was this the case with 2563, W.N., where a narrow, constricting sinus communicated with the abscess; or, as in the case of No. 2288, A.H., where the abscess communicated with a bronchus. In these two instances a slow process of septic poisoning was going on, owing to the putrefactive changes in the pus in the abscess cavities which communicated freely with the outer air.

Remarks on the  
opening of hepatic  
abscesses.

The practice usually followed has been to ascertain the presence of pus by an aspirator needle. As soon as the abscess refills and requires a second tapping an aspirator needle with a groove in its outer surface is introduced, and when it is demonstrated that the abscess cavity has been reached, a bistourie is passed along the groove, and an incision of the parietes is made according to discretion; the finger follows this up, and clearly proves that the abscess cavity has been well reached; a large drainage tube is then inserted. If, however, the ribs should be found to be so compressed as to leave no room for a drainage tube, a piece of one should be resected, in the gap of which the tube would easily lie. Unless the pus is very offensive, or, in other words, if putrefaction has not set in, there is no need to wash out the cavity, but the skin all round for some distance should be washed daily with a carbolic solution, and the utmost cleanliness of surface enforced. On the other hand, if putrefaction has set in, then the poisonous fluids should be washed out daily with a warm sublimate, iodized, or chlorinated lotion. The wound should be then well covered by a large, dry, absorbent dressing. As soon as the cavity has contracted the large tube should be changed for a smaller one, and great care taken to keep the external wound sufficiently open until the healing inside is complete.

Five cases of iliac and psoas abscess are shown. These cases were of a tubercular nature, though it was not possible in all of them to trace where the bone was diseased. In the cases included in the return, owing to the hectic and tension, an opening had to be made. In two of them at least the pus

On the opening  
of iliac and  
psoas abscesses.

had passed beneath Poupart's ligament, and had become very evident in the upper part of the thigh. The openings in all these cases were made above the crest of the ilium, just external to the quadratus lumborum muscle. The reasons for this situation are that it was considered that this abscess arose from tubercular disease of the vertebræ, and therefore the nearer the seat of disease the abscess could be evacuated the better for the patient, as there would be less destruction of tissue, and less length of track in which pus could accumulate and putrefy. Then again, for every reason it must be better to discharge an abscess close to the seat of its origin and cause than to let it come to the surface after passing through a long track of connective tissue between the planes of muscle. The situation in the loin is, moreover, favourable to drainage, and admits of an easy application of dressings. In the cases where the abscess had reached Poupart's ligament or passed under it, as soon as the opening in the loin was made, the large abscess sac contracted and all swelling disappeared. To ensure this the thighs were kept well bandaged, so as to support the emptying sac, and keep its sides, as far as possible, in contact. In some of the cases the eroded bodies of the lumbar vertebræ were easily felt by the fingers during the operation. In others, as above remarked, no diseased or loose bone could be reached in any direction. The wounds were dressed in all cases with sal alembroth wool. This mode of opening these abscesses is recommended by Mr. Chiene, of Edinburgh, and it is noted at page 510 of Mr. Cheyne's work, "Antiseptic Surgery," and the writer thoroughly bears out the value of this mode of opening chronic abscesses in this situation.

A new dressing.

A new antiseptic has been recently brought forward by Sir Joseph Lister, who has been for some time past endeavouring to find an antiseptic as powerful and reliable as the sublimate of mercury, but which would not affect the skin in the same distressing manner nor to the same extent: for, as every surgeon knows, this sublimate of mercury in some instances proves so distressing that, at all costs to the patient, it must be changed for some other and less reliable one. The antiseptic which is now brought to the notice of surgeons is a double cyanide of mercury and zinc. It is prepared for surgical uses in various ways by Messrs. Milne, of Ladywell. Sir Joseph Lister, in introducing it before the Medical Society, said:—"That under it "not only do wounds unite beautifully by first intention, but even granulating sores heal by the gradual process of cicatrization in a way that we "have never seen so satisfactorily under any other dressing." It is also, he says, "quite unirritating to the skin."

Some specimens of the dressing were sent to Netley by the manufacturers, viz.:—Cyanide gauze, tissue, wool and gauze bandage, for trial. The results have been most satisfactory. In a case of operation on unbroken skin, as in the dissection and removal of three neuromata from the stump of an arm, the wounds were dressed with the moist lint dressing, and they healed by first intention without any trouble. In another series of cases, where old septic sinuses had undermined lymphatic glands in the groin for months. These were laid open, and all collateral sinuses divided up, entailing in each case very large and deep wounds. The granulating process has gone on, under the influence of the cyanide gauze in a way that can only be described as Sir J. Lister described it, "in a way that we have never seen so satisfactorily under any other dressing." The wounds are covered with a rapidly granulating tissue, in which no cells seem to break down into pus. In other words, the reparative material is all to the good, and no cells are lost in a superficial suppuration. The effect has surprised and delighted all who have been witnesses of the inhibitory power of the cyanide dressing on these old septic wounds. It cannot fail to be a most valuable aid to the surgeon if it only prove to be of a sufficiently stable nature to stand storage.

It is only fair to add that the success of all antiseptic dressings depends mainly upon the care and intelligence with which they are used. To ensure their full effect, and, indeed, to render them serviceable and economical, they must be applied by the surgeon himself, and can only be delegated to trained nurses when they have been fully instructed in their use and principles. As to the importance of this care it is only necessary to consider for one moment the perils that any patient is subject to, who is suffering from any suppurating or septic wound, and when it is thoroughly comprehended that the surgeon can, by his treatment of wounds, free his patient from these risks, he will

possess the strongest incentive to spare himself no trouble, and to disregard the tediousness and irksomeness of carefully applying the dressings himself, when by these means his patients may without doubt be protected from those dangers which are ever present in a surgical case; and, again, by the scientific use of these dressings, which in the first instance, no doubt, are expensive, he proves by his successful results their true economy.

These remarks are borne out by Sir Joseph Lister, who, in his address before the Medical Society on the 4th November 1889, says:—"I have the satisfaction of knowing, that there is among you a constantly increasing number, who, when they have operated on an unbroken skin, with a fair field around for the application of their dressings; if they see septic inflammation occurring in the wound, with its attendant dangers, know it is *their* fault, or the fault of the antiseptic appliances at their disposal."

During the past year, a small work on Surgical Bacteriology has been published by Professor Senn, of Chicago, U.S.

In it he brings together the modern views as to the microbic origin of the various forms of infective surgical disease, including suppuration; and the whole is so pleasantly written that the study of it cannot but prove most interesting and instructive to all engaged in the practice of surgery. The references are fully given, so that those having access to a library can refer to the original papers, but those who are by distance or from other causes prevented from having such access, will find ample material for reflection in the little book now brought under notice. Any study that tends to reduce the great mortality that has always attended wounded soldiers in the field must possess the strongest interest for all army surgeons.

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## APPENDIX No. III.

REPORT UPON THE MILITARY MEDICAL EXHIBITS IN THE  
EXHIBITION AT PARIS, 1889.

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By Brigade Surgeon C. H. Y. GODWIN, M.S., Assistant Professor of Military Surgery, Army Medical School, Netley.

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In the part of the Exhibition situated on the Esplanade des Invalides, the Minister for War exhibited, in Class 66, a large and most interesting collection of war matériel, besides numerous other things connected with military life in modern and ancient times.

Close by were also the exhibits of the three great "Red Cross" Societies of France, namely,—

1st. Société de Secours aux Blessés Militaires des Armées de Terre et de Mer.

2nd. Union des Femmes de France.

3rd. Association des Dames Françaises.

Passing at once to the military medical exhibits, one was struck with the fact that the French military surgeons have not to trouble themselves with the difficulties as to how the efficiency and strength of sick carriage must be combined with lightness and the capability of packing on shipboard, which conditions so increase the difficulty of arranging suitable sick transport for the military operations of this country.

The ambulance carriages exhibited were convenient and well arranged for their purposes, but all were heavy, on strong substantial frames with fixed covers or tilts, and such as could not have been taken on shipboard without great loss of space, and with possible damage to the different vehicles, though they were well suited for taking their place in the columns on regular roads where the draught is not excessive and transport animals abundant.

With these preliminary remarks I think it will be convenient to follow the list of the official catalogue and to take the various exhibits in the following order:—

Surgical appliances.

Clothing, bedding, and feeding arrangements. •

Tents.

Carriages.

Ambulance trains.

Surgical  
appliances, &c.

The surgical appliances and dressing materials in use in the French Army correspond very closely with similar articles in use in our own, and need very little remark. I was informed that all the old pattern dressing materials were in process of elimination, and that in future those known technically as the "antiseptic wools" would be the only ones used for the treatment of wounds in military hospitals. Also, it was noticed that all the handles of the various surgical instruments are now made of plain smooth metal instead of roughened wood, so that they may be rendered perfectly clean when the instruments are soaked in a carbolic solution previous to use. No doubt the older fashioned roughened wooden handles are very liable to become soiled and retain dirt under the conditions of field service.

The bedding and clothing seemed very good of its kind, and quite suitable for its purpose.

Bedding and clothing.

The tents exhibited were of three kinds :—

Tents.

- 1st. The tents known as the "Mignon Mahon,"
- 2nd. Those known as the "Tent Walker," and
- 3rd. The "Tent Tollet."

These were long round topped tents with rounded ends, double walls and roofs. The latter were supported by ridge poles and poles, but the sides springing from the roof were kept in place by a series of iron and wooden ribs, so that there was no need of any ropes extending beyond the tents' sides, such as we are accustomed to see in our English and Indian marquees and tents. These tents were more spacious and roomy in consequence of having no slanting roofs. The tent "Tollet" had window frames which admitted light, and thus gave a bright appearance to the inside, but though these tents are said to be not very heavy, and very easy to be put together, they did not appear to be so convenient and easy to carry as those of the English pattern; they seemed, moreover, to be very liable to become damaged.

The tent "Tollet" is intended to be used only as an "operating tent," and for this purpose it is an excellent one.

In these tents many methods of constructing cots and supports for stretchers out of rough wood were shown; in some cases rough packing case wood was made into trestles upon which the stretchers were laid, and thus the patient would be kept from touching the ground. In others very serviceable cots were constructed from the same kind of wood.

Extemporised cots.

In one of these tents the sac d'ambulance was exhibited. It corresponds with our field companion. In shape and appearance it looks like a knapsack, and weighs about 20 lbs. It contains in addition to certain medicines and dress-materials some surgical instruments. One is issued to every battalion.

Sac d'ambulance.

The sacoches d'ambulance are a pair of wallets or holsters for the saddle, and are used in the mounted branches. They contain the same things as the sac d'ambulance.

Sacoches d'ambulance.

The first field dressing consists of simply two pieces of ordinary lint and a bandage wrapped up in a packet.

First field dressing.

The French Army surgeons informed me that little or no importance was attached to these dressings; in their estimation they had no surgical value, the good they were capable of effecting was simply a moral one, and therefore it was useless to incur a great expense for a dressing that had no practical value.

The service stretchers are not unlike our own, but they appeared to be a little heavier, they have wooden legs which fold up and which do not look as if they would stand much knocking about.

Stretchers.

The musette à pausement corresponds very closely with our orderlies dressing case, and contains much the same materials for wound dressing. It is intended for use by the hospital and regimental infirmiers.

Musette à pausement.

The carriage belonging to the medical service is named in the official catalogue and numbered as detailed below :—

Sick carriage.

259. Voiture médicale régimentaire.
260. Voiture de chirurgie.
261. Voiture d'administration.
262. Fourgon d'approvisionnement, No. 1.
263. Fourgon d'approvisionnement, No. 2.
264. Voiture pour transport de blessés à deux roues.
265. Voiture pour transport de blessés à quatre roues.
- 266 and 267. Litters and cacolets.
268. Voiture pour le transport du personnel affecté à un hôpital de campagne.

The voiture médicale régimentaire, No. 259 of the catalogue, is a two-wheeled cart, containing a pair of medical canteens, a pair of reserve panniers, eight stretchers, &c., and forms the equipment supplied to each battalion.

Voiture médicale régimentaire.

In a corps d'armée there is one of these carts for the ambulance of the quartier général d'armée for the corps troops, one for each battalion of infantry, one for each regiment of cavalry, and one for each division of artillery.

Voiture de chirurgie.

The voiture de chirurgie No. 260 of the catalogue is a large four-wheeled fourgon, having a fixed tilt, and is only suitable for good roads. It contains a complete surgical outfit corresponding to our medical field panniers, reserve medical field panniers, and special surgical panniers.

Voiture d'administration.

In a corps d'armée two are given to the ambulance of the quartier général for the corps troops. Two to the ambulance of a division of infantry.

Voiture d'administration No. 261 of the catalogue is a large four-wheeled covered store wagon fitted with drawers and partitions for the packing of food supplies and cooking utensils, and is intended for the preparation of the food of the sick with the ambulances.

Fourgon d'approvisionnement.

In a corps d'armée, two are given to the ambulance of the quartier général. Two to the ambulance of a division of infantry.

Fourgon d'approvisionnement No. 262 of the catalogue is a large covered store wagon, containing reserve medicines, instruments, reserve food stores, bedding, and stretchers.

In a corps d'armée four are given to the ambulance of the quartier général. Four to the ambulance of a division of infantry. Two to a brigade of cavalry. Eight to a field hospital.

The wagons serve to carry men, and the baggage of the regimental infirmiers when in use with cavalry.

Voiture pour transport de blessés à deux roues.

Voiture pour transport de blessés à deux roues (264 of the catalogue) is a light cart on two wheels. It contains a few stores and can carry two men on stretchers, or four sick men sitting up. It is very like in appearance our own two-wheeled ambulance cart.

In a corps d'armée ten are supplied to the ambulance of the quartier général. Six to the ambulance of a division of infantry. Three to a brigade of cavalry.

Voiture pour transport de blessés à quatre roues.

Voiture pour transport de blessés à quatre roues is a large four-wheeled covered-in wagon. It carries a few stores and four stretchers. It has a hinged seat on either side on which, if both are up, ten men can sit omnibus fashion, or if both seats are let down, four loaded stretchers can be accommodated, two on the floor and two above; or again five men can sit on one side on the seat, and two loaded stretchers can be carried on the other, one above the other. It is a very heavy wagon, and though suitable enough for roads, yet it would be a very difficult carriage to pack on board ship owing to the space it would require.

In a corps d'armée one is given to the ambulance of the quartier général. One to that of a division of infantry. One to a field hospital.

Cacolets and litters.

Cacolets and litters are of the same pattern as those in our own service.

In a corps d'armée 10 litters and 20 cacolets are given to the ambulance of the quartier général. 10 litters and 20 cacolets to that of a division of infantry.

Voiture pour le transport du personnel affecté à un hôpital de campagne.

Voiture pour le transport du personnel affecté à un hôpital de campagne, 268 of catalogue.

This is practically a large omnibus for carrying the dismounted officers of one ambulance or field hospital, and who consist of the pharmaciens, and the officers d'administration. All medical officers in the French service in the field are mounted.

In a corps d'armée one of these conveyances is given to the ambulance of the quartier général. One to the ambulance of a division of infantry. One to a field hospital.

Railroad transport.

Railroad transport.—Railroad transport is classified under two headings: 1st. Les trains sanitaires permanents; 2nd. Les trains sanitaires improvisés.

Les trains sanitaire improvisés.

The latter or extemporized hospital trains are laid down in the regulations to be composed of 23 to 30 covered goods wagons fitted with the apparatus "Bry" for the suspension of the stretchers, with five carriages added for the attendants and necessary stores.

These improvised hospital trains are ordered to be prepared by the staff of the stationary hospitals on the lines of communication (hôpitaux d'évacuation), who place in the empty goods wagons this apparatus, which is most easily adjusted, and enables 12 stretchers to be suspended in each wagon. This apparatus is quickly and easily set up, owing to every covered goods wagon belonging to the great railways "de l'ouest," having certain holes made in its sides, which admit of this system "Bry" being firmly fixed by

the insertion of certain bolts and screws. Thus every goods wagon is not only lettered that it can carry 8 horses or 32 men, but in addition it can be converted into an improvised hospital wagon for 12 men by this system "Bry" for the suspension of stretchers.

This apparatus, called after the inventor Colonel Bry (see diagrams attached), is an arrangement for rendering it possible to carry sick and wounded men in stretchers fairly comfortably in covered goods wagons. A goods wagon can carry 12 loaded stretchers, six at either end, in two tiers of three and three.

Apparatus Bry.

The stretchers at head and foot rest upon two stout traverses of wood, and are kept in their places by a bracket arrangement, which holds the legs of the stretchers in their places resting against the traverse. Each traverse is held up and suspended at its extremities by an elastic steel spiral spring, strong enough to support the weight. These springs are fastened to iron stanchions which are securely bolted to the sides of the wagon. The effect is that the stretchers supported on their traverses ride quite easily, as all the jolts and jars of the wagon are taken by these coils of steels, which hold up the traverse.

The regulation is that every train conveying stores to the army in the field is to have one wagon fitted up with these appliances. When the train has been emptied of its stores, the staff of a "hôpital d'évacuation" fit up all the empty wagons with this apparatus, and then fill the train with the sick and wounded, so that the train on its return journey conveys back from the theatre of war to the territorial hospitals the men who have fallen out of the fighting line.

Other plans were exhibited in which the stretchers rested on traverses, which were supported upon ropes which passed from one upright to another. The uprights were stakes of wood, fixed into holes bored in the floors of the wagons, and kept in the perpendicular by fastenings of rope to the sides of the wagons, but these plans allowed of so much motion that they were unfavourably reported upon, and could therefore only be recommended under circumstances in which there was no other method available.

A third method was also exhibited, that of M. Gavoy. It is intended for rendering any sort of covered goods wagon available for carrying stretchers, and by this means, eight loaded stretchers could be carried per wagon, four at either end, in tiers of two and two.

M. Gavoy's system.  
Le système axial.

A stout iron support is fixed in the floor and against the roof in the centre of the wagon, at either end are two of these, from them extend, on either side, two arms of iron, upon these arms rest the stretchers. The objection to this method is, that by its rigidity every shake and vibration of the wagon is acutely felt by the sick men on the stretchers.

Les trains sanitaires permanents.—A permanent hospital train numbered 271 to 274 in the catalogue was also exhibited. Such a train consists of 16 carriages, of which eight are fitted up with bunks or cots, one is fitted up as a surgery and dispensary, and one as a kitchen. The train when complete has also a carriage for the medical officers, one for the orderlies, one for the food stores, one for a linen store, and for things of a combustible nature. All the carriages communicate with each other by central passage, which extends throughout the whole length of the train.

Les trains sanitaires permanents.

These permanent trains, in every sense movable or rolling hospitals, are put together occasionally for practice with all the fittings which are kept ready in peace time, but they are not permitted to go out of the French network of lines. Such trains can only be useful to the continental powers, but such a train in India could convey sick and wounded from Peshawar to Bombay without the need of rest camps, though, doubtless, when a number of the men travelling are not very sick or helpless it is advisable for many reasons to have them detained for some hours each day.

#### MEDICAL AID IN THE FIELD, AS RENDERED IN THE FRENCH ARMY.

The medical service in the field is divided into:—

The service for the front—"Service de l'avant."

The service for the rear—"Service de l'arrière."





"orderlies, also to those troops of transport for the time placed at their disposal."

Again, Art. 19. "Règlement sur le service de santé à l'intérieur," states that "the director of the medical service is invested in respect to all the personnel of the hospital establishment with the disciplinary powers given to brigadier generals and to colonels according as he has the rank of médecin inspecteur or médecin principal of the first class. He can order the close arrest or the imprisonment up to a limit of 30 days of a medical officer, or of an officer d'administration, whether attached to the administration, or to a hospital of a corps d'armée"; and—

Art. 40. "The detachment of the military transport are attached to the ambulances and field hospitals for moving their carriages, and with mules for their cacolets and litters. These detachments are commanded by an officer or an under officer, under the authority of the medical officer in charge."

The field hospitals.—These hospitals are especially organised to treat near the field of battle all the seriously wounded, and also those who are too ill to be moved. They are all numbered with each corps de armée, of which they form an integral part; thus hospital 1, 2, or 3 of 1re or 2de corps d'armée, as the case may be. Each hospital is intended for 100 men, and can be divided into separate halves. Whenever (Art. 87) a field hospital is so full that it cannot be moved, it passes under the authority of the director of the lines of communication. When a battle is expected, the general officer commanding the corps d'armée orders the advance of as many field hospitals as he thinks will be needed; these usually establish themselves near the ambulances, but they ought to be outside the range of fire, and yet sufficiently close to enable the ambulance carriages to make successive journeys. Art. 91 states that the most suitable situations are near roads and railroads, rivers or canals, and goes on to say that in making use of permanent buildings as temporary hospitals, new buildings not shut in, as châteaux, villas, farmhouses, barns, &c. are preferable to dwellings which have habitually been crowded, as schools, convents, barracks, &c. Art. 94. The civil medical men of the neighbourhood, as well as corvées of labour can be requisitioned if required. Art. 95. In case of a retrograde movement the field hospitals remain with their wounded protected by the Convention of Geneva, but if a section of the hospital can be moved that portion is to follow the movements of the troops.

Field hospitals.

Service de santé de l'arrière.—Medical relief in the rear consists of two groups:—

Service de santé de l'arrière.

1st. The hospitalism of the locality.

2nd. Les hôpitaux d'évacuation.

The first group comprises field hospitals temporarily unfit to be moved on account of the serious cases they contain; field hospitals segregated on account of containing cases of contagious or epidemic disease; the permanent hospitals of the territory occupied, also the auxiliary hospitals formed by the Red Cross Societies. These are all under the general officer commanding the lines of communication. The second group comprehends "les hôpitaux d'évacuation," placed at the head of each line of communication, and in which the patients intended for a return to their own country are received so that they may be classified and sent back as occasion offers; also the infirmaries of the stations and rest camps, the hospital trains, and the hospital canal boats. Art. 102 states that the hospitals of the territory occupied are to be used as largely as is possible.

Hospitalism of the locality.

Les hôpitaux auxiliaires.—The hospitals so called, and which have come to be of great importance, are those formed by the "Société Française de secours aux blessés" and the two kindred ones. These Red Cross Societies occupy so important a place in the medical service of France that I will briefly describe them.

Auxiliary hospitals.

Sociétés privées.

Art. 1, Décret 3d Juillet 1884, states that the "Société Française de secours aux blessés des armées de terre et de mer" is authorised to help in time of war the military service, and to give to the sick and wounded the gifts offered by the public generosity.

Regulations.

Art. 2. The office of this society consists in time of war, 1st, in forming at the seat of war, and in places pointed out by the Minister of War, or by the general commanding the district, as the case may be, hospitals for the recep-

Distribution of duties.

tion of the sick and wounded belonging to the army, but that they are not to intrude upon the fighting line, or the field hospitals, which service is placed entirely in the hands of the military medical service. In the French War Office the country towards the frontier is mapped out, and the large towns on the roads and canals are marked as well as the principal stations on the railroads. These places are distributed as it were between the three Red Cross Societies, who undertake to form and to furnish at each place a hospital of not over 200 beds, and not less than 20, to receive such sick and wounded as may be passed on to them, and to do for them entirely until they have recovered or died. The whole of the auxiliary hospitals are under the superintendence of the directors of the medical service, acting under the military authority of the district.

Under the superintendence of the medical service.

No foreign ambulance to be allowed to act independently.

In any future war no foreign ambulance is to be allowed to work independently, there is a widespread opinion that France suffered greatly through spies who carried on their business protected by the brassard of the Geneva Convention in some of the foreign ambulances. It is therefore ordered that in future wars all foreign ambulances must conform to Art. 18, Décret 3me Juillet 1884, and act with and under one of the French societies—not independently.

Red Cross Societies.

The three Red Cross Societies are—

- (1.) La Société Française de secours aux blessés Militaires.
- (2.) L'Association des Dames Françaises.
- (3.) Union des Femmes de France.

La Société Française de secours aux blessés.

Origin.

The first, "La Société Française de secours aux blessés," may be termed the Red Cross Society of France par excellence. It came into existence after the Convention of Geneva, 1864, when nine governments, and afterwards 23 others, proclaimed the neutrality of field hospitals. The protection thus accorded to the personnel and to hospital matériel led in Europe to the creation of special societies whose object was to concentrate and dispense private charity for the benefit of those soldiers who might be sick or wounded in war time.

This society was recognised in 1866 as an establishment of public utility, and received as its mission "to attempt by all the means in its power to "relieve the suffering of the sick and wounded in war." A decree of the 3rd July 1884 confirmed all previous ones, and issued regulations for its conduct in the field, when it is constituted a permanent auxiliary to the Army Medical Service, for the purpose of distributing the resources of voluntary assistance.

Under military authority.

For this purpose it is placed under the military authority, and under the directors of the medical service. Art. 4. No one is to be employed by this society unless he is a Frenchman, or a naturalised Frenchman, and only then if he has completed all his military engagements. Art. 7. The personnel of the society, when employed with the army, is under military law, and subject to the military courts. Art. 16. All the establishments of this society in matters of discipline are placed under the military authority, and in matters of hygiene and routine under the director of the medical service.

Art. 18. Branches of similar foreign societies can only be accepted to work in aid with this society after obtaining the official sanction of the Minister of War, and then only on the condition of being under the direction of the society.

This society was in 1884 commissioned by the Minister of War to provide auxiliary hospitals with personnel complete at 42 railway stations. Since that date the number has been increased to 54.

L'association des Dames Françaises.

L'Union des Femmes de France.

The other two Red Cross Societies, viz., L'association des Dames Françaises, formed in 1879, and L'Union des Femmes de France, founded in 1881, are officially recognised as of "public utility," and are accepted as auxiliaries to the medical service of the army. Their members wear the brassard of the Geneva Convention. Both of these societies differ from the Red Cross, in that they undertake to help and provide assistance for the public in times of public disaster, whereas the Red Cross Society is entirely intended for service in war time only.

Origin.

These ladies' societies were founded after the war with Germany, in imitation of the appeal made to the women of Germany by H.I.H. the Empress Augusta.

The articles state that "these societies, in creating an army of female hospital workers, have given to the national army thousands of strong arms, they have given to thousands of mothers the knowledge of hygiene that must be most useful, they have given to their country knowledge, whereas before was ignorance, they have taught the women of France their power, and have given to them the means of exercising it."

They have as their object to collect and organise in Paris, and in all the departments, a personnel and matériel which can in pressing need be placed at the disposal of the Minister of War, they also assist by bringing together in any locality in which it is needed a rapid organisation of the medical aid of the places themselves. They give to all their members a theoretical and practical instruction in all branches of medical assistance that they are likely to be required to exercise. They thus prepare themselves to receive, treat, and deal with the sick and wounded who, under circumstances of war, would always be streaming back from the hospitals of the front into the home territory. Mission.

All these societies are well supported, and have strong branches in the departments. They have constant meetings, lectures, and instruction classes in all forms of "first aid;" besides this the ladies have, by means of private industry and public working meetings in their different working branches, created enormous dépôts of every kind of articles of clothing and dressing material that could be required by sick and wounded men.

They have instituted temporary hospital buildings and pavilions; they have their own ambulances and hospital trains of the most complete description.

It is to these auxiliary hospitals scattered in all directions upon the lines of railroads, rivers, and main roads, that the greater part of the sick and wounded will be drafted from the front. It is in these hospitals that the sick will be taken care of, fed, and nursed, until they die or recover, and as they are entirely maintained by private philanthropy and without any expense to the State, they render the medical service of the army free to be employed with that portion of the army engaged in carrying on active operations beyond the frontiers. Effect of these societies.

To enable the War Minister to utilise these auxiliary hospitals a return is sent in every six months by each society to the Minister of War, showing the number of beds they are prepared to equip in each of the places allotted to them on the lines of communication mentioned above, as well as in the towns of the departments themselves.

TABLE "A."

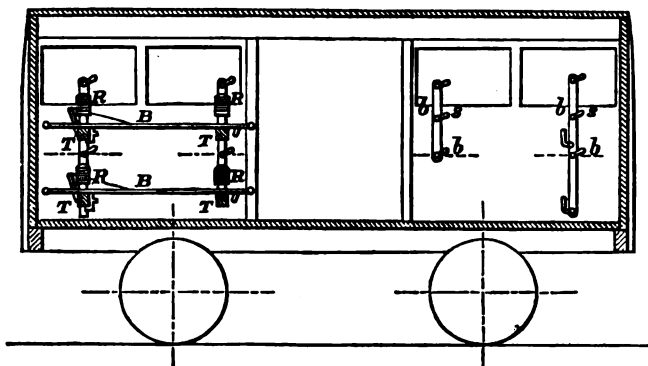
|                                                  | Personnel. |              |                             |            |                       |            |                 |              |                           |                             | Matériel.                    |   |   |                                 |                                   | Moyens de Transport. |                      |       |               |                   |                               |                                  |                                 |                                          |                                          |                          |                       |                       |                               |   |   |
|--------------------------------------------------|------------|--------------|-----------------------------|------------|-----------------------|------------|-----------------|--------------|---------------------------|-----------------------------|------------------------------|---|---|---------------------------------|-----------------------------------|----------------------|----------------------|-------|---------------|-------------------|-------------------------------|----------------------------------|---------------------------------|------------------------------------------|------------------------------------------|--------------------------|-----------------------|-----------------------|-------------------------------|---|---|
|                                                  | Médicins.  | Pharmaciens. | Officiers d'Administration. | Aumôniers. | Infirmiers.           |            |                 | Ordonnances. | Infirmiers régimentaires. | Brancardiers régimentaires. | Appvisionnement d'ambulance. |   |   | Canitines médicale, paîtres de. | Chargement de voitures médicales. | Rouleaux du secours. | Paîtres de sacoches. | Sacs. | De chirurgie. | D'Administration. | Fournons d'approvisionnement. | Pour tentes, vivres, et bagages. | Pour le transport du personnel. | A 2 roues pour le transport des blessés. | A 4 roues pour le transport des blessés. | Médicales régimentaires. | Cacolets, paîtres de. | Litières, paîtres de. | Chevaux de selle d'officiers. |   |   |
|                                                  |            |              |                             |            | Commis aux écritures. | De visite. | D'exploitation. |              |                           |                             |                              |   |   |                                 |                                   |                      |                      |       |               |                   |                               |                                  |                                 |                                          |                                          |                          |                       |                       |                               |   |   |
|                                                  |            |              |                             |            |                       |            |                 |              |                           |                             |                              |   |   |                                 |                                   |                      |                      |       |               |                   |                               |                                  |                                 |                                          |                                          |                          |                       |                       |                               |   |   |
| Ambulance de quartier général du corps d'armée.  | 6          | —            | 3                           | 3          | 3                     | 12         | *115            | 6            | —                         | —                           | —                            | — | — | —                               | —                                 | —                    | —                    | —     | —             | 2                 | 2                             | 4                                | 2                               | 1                                        | 10                                       | 6                        | —                     | 20                    | 10                            | 7 |   |
| Ambulance de division d'infanterie -             | 6          | —            | 3                           | 1          | 3                     | 12         | *116            | 6            | —                         | —                           | —                            | — | — | —                               | —                                 | —                    | —                    | —     | —             | 2                 | 2                             | 4                                | 2                               | 1                                        | 6                                        | 1                        | —                     | 20                    | 10                            | 7 |   |
| " de brigade de cavalerie -                      | 2          | —            | 1                           | 1          | 1                     | 4          | 11              | 3            | —                         | —                           | 1                            | — | — | —                               | —                                 | —                    | —                    | —     | —             | —                 | —                             | 2                                | —                               | —                                        | 3                                        | 3                        | —                     | —                     | —                             | 4 |   |
| " de division -                                  | 6          | —            | 3                           | 1          | 3                     | 6          | 19              | 6            | —                         | —                           | 3                            | — | — | —                               | —                                 | —                    | —                    | —     | —             | —                 | —                             | 6                                | —                               | —                                        | 6                                        | —                        | —                     | —                     | —                             | 7 |   |
| Hôpital de campagne -                            | 6          | 2            | 2                           | —          | 3                     | 14         | 20              | —            | —                         | —                           | —                            | — | — | —                               | —                                 | —                    | —                    | —     | —             | —                 | —                             | 8                                | 1                               | 1                                        | —                                        | —                        | —                     | —                     | —                             | 4 |   |
| " d'évacuation -                                 | 6          | 1            | 2                           | —          | 4                     | 8          | 34              | 2            | —                         | —                           | —                            | — | — | —                               | —                                 | —                    | —                    | —     | —             | —                 | —                             | —                                | —                               | —                                        | —                                        | —                        | —                     | —                     | —                             | 3 |   |
| Régiments d'infanterie -                         | 40         | —            | —                           | —          | —                     | —          | —               | —            | 12                        | 62                          | —                            | — | — | —                               | 3                                 | 3                    | —                    | 3     | —             | —                 | —                             | —                                | —                               | —                                        | —                                        | —                        | 3                     | —                     | —                             | — | — |
| Battallons de chasseurs à pied -                 | 2          | —            | —                           | —          | —                     | —          | —               | —            | 4                         | 17                          | —                            | — | — | —                               | 1                                 | 1                    | 1                    | —     | —             | —                 | —                             | —                                | —                               | —                                        | —                                        | —                        | 1                     | —                     | —                             | — | — |
| Régiments de cavalerie -                         | 1          | —            | —                           | —          | —                     | —          | —               | —            | 4                         | —                           | —                            | — | — | —                               | 1                                 | 2                    | 2                    | —     | —             | —                 | —                             | —                                | —                               | —                                        | 2                                        | —                        | —                     | —                     | —                             | — | — |
| Groupe de batteries divisionnaires d'artillerie. | 2          | —            | —                           | —          | —                     | —          | —               | —            | 4                         | 17                          | —                            | — | — | —                               | 1                                 | 1                    | —                    | —     | 1             | —                 | —                             | —                                | —                               | —                                        | —                                        | —                        | —                     | —                     | —                             | — | — |

\* 80 of these are stretcher bearers.

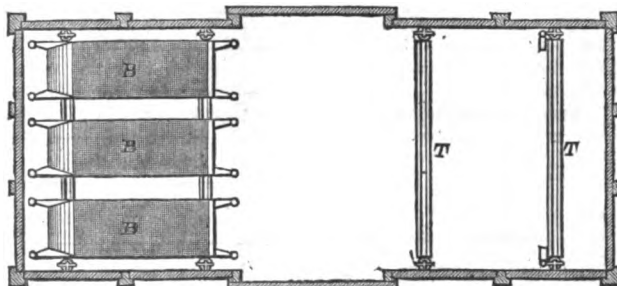
† Of these three are temporarily added.

## APPAREIL BRY.

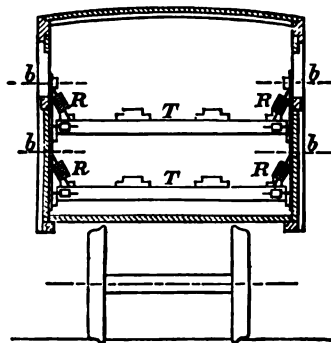
Coupe Longitudinale.



Plan.



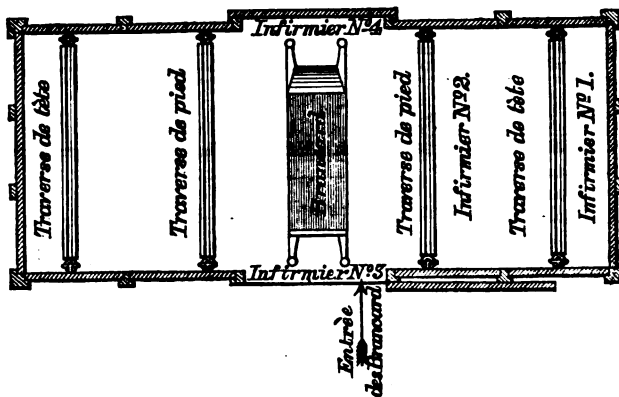
Coupe transversale.

*Légende.*

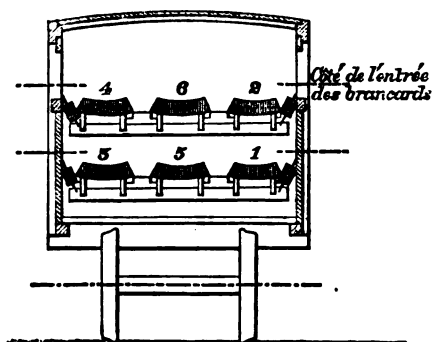
- B.** Brancards.  
**T.** Traverses de suspension.  
**S.** Supports de traverses de brancards.  
**b.** Boulons d'attache aux paroi du wagon.  
**R.** Appareils élastiques.

## APPAREIL BRY—continued.

Croquis No. 1 (Plan).



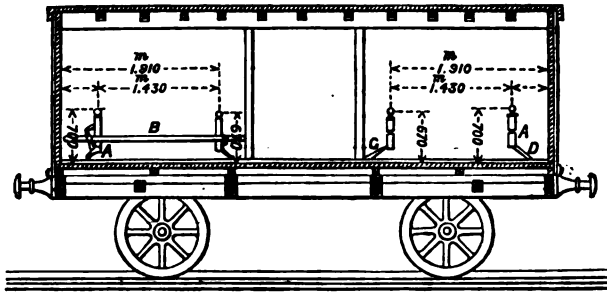
Croquis No. 2 (Coupe).



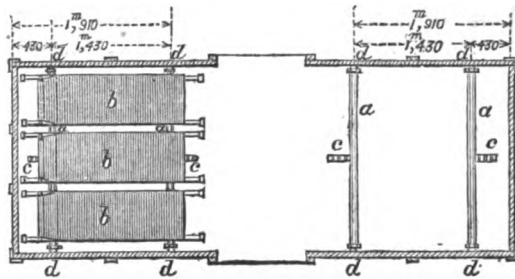
## APPAREIL BRY—continued.

Wagon à marchandises aménagé pour le transport des blessés dans les trains sanitaires improvisés.

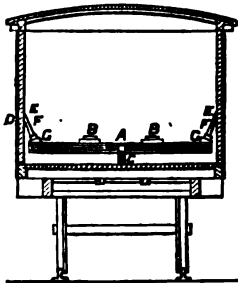
Coupe longitudinale (1/10).



Plan (1/10).



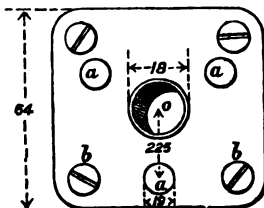
Coupe transversale (1/10).



## Légende.

- a. Traverse de suspension des brancards.
- b. Brancard.
- c. Courroie de brélage.
- d. Boulon d'attache.
- e. Ecrin à béquille.
- f. Ressort de suspension.
- g. Support de brancard.

Plaque indicatrice des trous de boulon de l'appareil de suspension Bry.



- a. Emplacement d'un trou de boulon.
- a. Trous de griffes de rondelle support de ressort.
- b. Vis de fixation.



APPENDIX No. IV.

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TWO CASES OF ENTERIC FEVER WITH HYPERPYREXIA,  
SUCCESSFULLY TREATED BY PROLONGED AND RE-  
PEATED COLD BATHING.

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By Surgeon J. V. SALVAGE, M.D., Medical Staff.

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Cold baths, or ice-packs, of more than an hour's duration, repeated in several instances four times within 24 hours, may be thought to justify the title of these notes. Probably, even English practice might with advantage encourage a more ready appeal to cold bathing as a means of lowering temperature. I think that in tropical countries its more frequent use might save many lives.

The two patients, whose cases are under consideration, were repeatedly, during accessions of pyrexia, almost as obviously and as certainly dying as though their blood had been streaming from a severed femoral, and the external application of cold no less visibly and unmistakeably warded off the fatal issue than might the ligature of the bleeding vessel. Once the temperature was lowered from  $106.1^{\circ}$  F. to  $98^{\circ}$  F. in an hour and a half, and the pulse from 140 to 100 per minute. On four other occasions there was a reduction of nearly  $7^{\circ}$  F. in the same time. All the temperatures were taken by myself with a Kew-verified thermometer,—in most instances in the mouth,—but, after bathing, the figures were always checked by those obtained per rectum. Such prolonged bathing would rarely be called for, and so marked a reduction of temperature could not be borne, in a more temperate climate, but the shade temperature was scarcely below  $80^{\circ}$  F. during the 24 hours. Large doses of quinine and salicylate of soda, alone and in combination, were given shortly after bathing, and at other times. Antipyrin was also used, but its administration was for the most part contraindicated by the weakness of the pulse. No drugs had any appreciable effect, either in lowering the temperature or in keeping it down.

Unfortunately, it is a so much less formidable proceeding for ourselves, for the attendants, and also for our patients, to administer one of the more or less useful antipyretics than to give a cold bath, that we are not loth to conclude that this or that case is not quite a suitable one for treatment by bathing; and though, probably, all are theoretically satisfied of the value of this method of reducing temperature many are still wanting in that practical appreciation of its curative potentiality, which would lead to its more frequent use.

The first of the two cases, J. N., *æt.*  $22\frac{3}{4}$  years, of  $2\frac{3}{4}$  year's service, was admitted into the Station Hospital, Colombo, in May, 1889. He had been 17 days ill when he came under my care. He was suffering from the more usual symptoms of enteric fever; loss of appetite, debility, general malaise, dry, furred tongue, enlarged spleen, &c. An uncontrollable diarrhoea and want of sleep had considerably reduced his strength. Though his temperature had not exceeded  $103^{\circ}$ , it had several times approached this limit. The heart's action though not rapid was weak. During the whole of the 18th, 19th, and 20th days his temperature did not go below  $102.6^{\circ}$ , and his condition grew worse.

On the 21st day, at 6.30 a.m., the temperature was  $103.6^{\circ}$ ; an hour later it had risen to  $104.8$ , the pulse was 100, his face was red and hot, skin dry and burning to the touch, tongue very dry and coated, and he complained of great

thirst and discomfort; a cold wet pack was applied for half an hour, and the temperature fell to 102° F., and did not again that day exceed 103°. He was now having 4 oz. brandy and 4 oz. port wine daily.

On the following morning, the 22nd of his illness, it was found that he had slept fairly during the early part of the night, his bowels had been opened 12 times during the preceding 24 hours. At 7.30 a.m. temperature was 104.8, and whilst preparations were being made for an ice pack it reached 105.2, but having been kept in the ice pack for rather more than half an hour it fell to 102.2.

Here, to avoid repetition, it may be stated that on every occasion when a cold bath or ice pack was given the patient was pretty evidently suffering from pyrexia, *per se*. His face was flushed and had the appearance of being very hot. The skin was dry and burning to the touch, tongue very dry, often covered with a thick, dirty-brown coating, sordes, often on the lips. Pulse very small and compressible, usually markedly dicrotic. Subjectively there was complaint of severe thirst, headache and discomfort; mind not unfrequently wandered slightly. On this occasion, as at other times, the reduction of the temperature by cold was accompanied by an abatement of the symptoms, both subjective and objective. The relief to the patient's sensations was so great that he frequently begged to be given a bath, even at times when it was not thought advisable.

At 4 p.m. the temperature having risen to 103.8°, ice was reapplied for half an hour, bringing it down to 101.8; by midnight it rose again to 103°, and the ice pack was employed for the third time within 16 hours; in half an hour the temperature had fallen to 101°, and the ice was taken off.

On the 23rd day, at 7.30 a.m., the temperature was 104.6°, the pulse 102, and the respiration 22; the ice pack was then applied for 45 minutes, which reduced the temperature to 101.8. At 4 p.m., the temperature being 105.4°, a cold bath was given for 40 minutes, which reduced it to 101.4°, but it continued to fall for an hour after the bath until it reached 100.9°. At 10 p.m., the temperature having risen to 103.2° an ice pack was given for half an hour, bringing it down to 101°.

On the 24th day the temperature being 104.2 and the pulse 105, he was bathed for 40 minutes, when the former was 100.3° and the latter 84. Again the temperature continued to fall for half an hour and reached 99.4°; for the rest of the day it remained below 102°, and no more cold was applied.

On the 25th day, at 8.15 a.m., the temperature was 106.1° and pulse 120; an ice pack was then applied for an hour and a half, reducing the former to 98°, the latter being 82. By 5 p.m. the temperature had risen to 105.6°, the pulse to 120, and respirations to 24; the ice pack was again applied for two hours, bringing the temperature down to 98°, but as at 11.25 p.m. it had once more risen to 105.2° a third application of ice for nearly an hour reduced it to 101.1°.

At 7.30 a.m. on the 26th day, the temperature being 106° and the pulse 140, the cold pack was again had recourse to for an hour and a quarter, when the temperature was reduced to 99.4; by 4 p.m. it had risen again to 104.8°; he was therefore bathed again for 30 minutes and it fell to 100.6°, a further drop to 98.4° taking place within the following 35 minutes. However, by 10.15 p.m. it was up again to 103.7, and he was once more put into an ice pack for 85 minutes, with the result that it fell to 98.8°.

On the 27th day, at 8.5 a.m., the temperature being 104.2° and the pulse 130, the ice pack was employed for 40 minutes, bringing the former down to 100.4 and the latter to 96. At 11.10 p.m. the temperature having risen to 103.4°, and the pulse being 116, the ice pack was repeated for 50 minutes, after which the temperature was 100.9° and the pulse 93.

On the 28th day for the first time for eight days no cold was applied in the morning, and it was hoped he would be able to do without it, as his condition had improved during the past few days, and the temperature did not exceed 103°. However, in the evening he was very decidedly worse, and at 10.35 p.m., the temperature being 103.9° and pulse 110, an ice pack was applied for 75 minutes, at the end of which period he was very much better, the temperature 99.5° and the pulse 95.

At 8.30 a.m. on the 29th day the temperature was  $103.7^{\circ}$  and the pulse 101, but after the application of an ice pack for an hour and a quarter they were  $99.3^{\circ}$  and 96 respectively. The temperature did not rise again to any extent during the rest of this day, and his general state continued better.

On the 30th day at 8.0 a.m., the temperature being  $103.5^{\circ}$  and the pulse 105, an ice pack was applied for an hour and a half, the result being temperature  $99.3^{\circ}$  and pulse 87. After this his temperature only once rose above 102, and in five days he was practically free from fever. He made a steady and complete recovery.

The second case so completely resembled the first in general character, that it would, perhaps, be tedious to recount it at length. The patient, who was 23 years old, had in all 42 days of fever; once his temperature reached  $106^{\circ}$  F.

Cold bathing was found necessary during nearly a third of this period; it was used in the same manner, and with the same marked improvement in the urgent symptoms as in the other case. Here, too, it was sometimes necessary to repeat the operation at frequent intervals and for long periods. He made a perfect recovery.

Although an advocate for a more liberal use of cold as a means of reducing temperature, especially in hot countries, I do not underrate the gravity of the method.

In the above cases the pulse and temperature were closely and continuously watched, and a record made at the end of every five minutes throughout the whole of every application of cold. It was not unfrequently necessary to administer brandy before, during, and after bathing, and means were always at hand for giving brandy or ether hypodermically.

Urethane and sulphonal were given in both cases, at the instance of Brigade Surgeon Archer, M.S., to whom throughout I was indebted for many practical suggestions.

The use of urethane was not apparent. Sulphonal in  $\frac{1}{2}$  dram doses was of considerable utility, and several times procured a satisfactory sleep. Its effect in producing drowsiness on the following, and sometimes on the second, day after its administration, was very marked. In these cases this prolonged effect was rather beneficial than otherwise.

As far as I can judge from a small experience of the drug, I should agree with those who consider sulphonal a valuable addition to the hypnotics.

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APPENDIX No. V.

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**CASE OF PERFORATION OF COLON BY DYSENTERIC ULCER,  
FOLLOWED BY ABDOMINAL ABSCESS, AND ABSCESS OF  
LIVER.**

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By Surgeon W. E. BERRYMAN, Medical Staff.

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Private—, 1st Battalion, West Riding Regiment, age, 26 years. Service, 6 years and 8 months.

This patient was admitted into hospital on the 20th December 1889, the day after his regiment arrived in York from Aden. He complained of malaise, pain and uneasiness in the right side, loss of appetite, and constipation.

History.—He was a very strong and healthy man until he went to India in 1884. In March 1887 he first noticed pain in his right side.

He said that he was accustomed to take five or six pints of beer a day, but was never a dram drinker. He was under treatment in hospital on three occasions, suffering from illnesses, which were returned as hepatitis.

He contracted syphilis in 1885.

There is no record of intemperance.

His medical history sheet showed no entry for dysentery, but the man stated that he suffered from diarrhoea, with bloody stools, whilst marching with his regiment from Peshawur to Delhi in November 1885, and since that time he suffered frequently from looseness of the bowels.

On admission his condition was as follows:—He looked older than age given; the complexion was sallow; the skin dry; expression haggard, and conjunctivæ rather dark in colour. He complained of pain over the 9th and 10th right costal cartilages, increased by pressure and movement of the body, and also pain between the shoulders and over the point of the right shoulder.

The heart and the lungs appeared to be quite healthy.

The urine was acid, S.G. 1012, with faint trace of albumen, and of normal colour.

Physical signs:—Hepatic dulness above commenced an inch below the nipple; below, hepatic dulness corresponded with the edge of the ribs as far back as the point of the 10th rib; beyond this point dulness extended downwards to a point an inch below the level of the navel, and about two inches to its right.

A distinct tumour was felt on palpation over this part. It was somewhat pear-shaped; its larger end being below, and to the right of the navel; its smaller end being apparently continuous with the liver. The lower half of this enlargement projected forward so as to form a globular bulging of the abdominal wall, which was distinctly visible at a distance.

Felt between the hands, placed one in front and the other at the back, the tumour gave the impression of an abscess in this region. Its connection with the liver appeared probable, but on the other hand, there was a distinct tympanitic area, between the edge of the ribs, below the 9th and 10th costal cartilages and the lower projecting portion of the tumour. There was also on palpation over the loin an absence of that fulness which is usually present in cases of hepatic abscess.

Just below the point of the 11th rib, he complained of constant aching pain, which was much increased by pressure. There was also marked tenderness over the most prominent part of the tumour. The position of the tumour did not vary with the movements of the patient.

A great increase in the area of the tympanitic note over the upper part of the abdomen indicated distension of the stomach.

From admission to the 19th January 1890 no material change in the physical condition of the patient occurred. Up to the 2nd January he suffered from constipation, which had to be relieved by enemata. On that date he had an attack of diarrhoea, which lasted two or three days, subsequently the bowels were occasionally constipated, and at other times relaxed. The stools were frequently examined, with the view of detecting pus, or other sign of an abscess in connection with the bowel, but nothing abnormal was discovered. During the whole period of his stay in the hospital he suffered from fever, the temperature ranging from 99° in the morning to 100° and 103° in the evening.

Pain was constant and frequently very severe. Its point of greatest intensity was in the region of the 11th rib, but it was marked over the whole hepatic region, and the tumour below it.

19th January.—On this day he was operated upon.

When under the influence of chloroform, a vertical incision, two inches in length, was made over the tumour, and the parts were carefully divided until the abdominal cavity was opened. It was hoped that the tumour would be found adherent to the parietes at this point, but it did not prove to be so. At the incision the large intestine presented, beneath and to the outer side of which the tumour could be distinctly felt. By means of the finger within the abdominal cavity, the edge of the liver was felt running downwards from a point in front of the 11th rib, until it became lost in a mass of newly-formed tissue, which bound it externally to the abdominal wall, and internally to the tumour and the large intestine. Adhesions connected this portion of the liver to the structures above mentioned as far upwards as the edge of the ribs. It was then decided to make a second incision, below the point of the 11th rib, as it was evident that the adhesions of the liver to the abdominal parietes on the outer side precluded the possibility of any pus escaping through such an opening. After the skin and superficial tissues were incised, an aspirating needle was passed inwards in the direction of the tumour. A thick, creamy, laudable pus having been thus withdrawn a director was passed through the canula, which was substituted for the aspirating needle into the abscess. A free opening was then made by a knife, guided along the director. This opening was still further enlarged by means of a dressing forceps. The little finger was introduced into the abscess cavity, and four inches of a large drainage tube was then fixed in the cavity. The primary wound in the abdominal wall was then carefully stitched and dressed, and dressing applied over the drainage tube, care being taken that any discharges from the abscess should not touch the primary incision. The whole was enveloped with an abdominal bandage. Not more than an ounce of pus came away during the operation. This was thick, yellow, laudable pus, and perfectly sweet.

20th January.—The patient passed a restless night, and was much exhausted from persistent vomiting. The dressings were left untouched.

Temperature was normal in the morning; 99·4° in the evening.

21st January.—He passed another restless night, vomiting still persistent, and the cause of great distress and exhaustion. There was no abdominal pain or tenderness. Temperature 100·2°, pulse 130 per minute. On the removal of the dressings there was found about half an ounce of thick chocolate-coloured matter, which was free from odour. Fresh dressings were then applied. The primary abdominal incision was left untouched. Morphia injections were given to induce sleep and check vomiting.

22nd January.—On the removal of the dressings they were found saturated with a foul smelling discharge. The abscess cavity was washed out with boracic lotion (grs. x to ʒi.), and a great quantity of dirty brownish badly-smelling pus came away. It was noticed that he had a desire to go to stool when the abscess cavity was washed out. The character of the motion passed gave no indication that the abscess cavity communicated with the bowel. The

primary abdominal wound was examined and found to present the appearances of a healthy wound united by "first intention." The abscess cavity was again washed out in the evening. Temperature  $100^{\circ} 2'$  pulse small and weak 130 per minute.

23rd January.—Vomiting still persistent, temperature  $100^{\circ}$ , pulse weak and thready, 130 per minute. He complained of much epigastric pain. The abscess cavity was washed out twice during the day. The solution as it returned was of a dirty brownish colour, but presented no disagreeable smell.

24th January.—Patient died at 7.45 a.m.

Post-mortem appearances.—The anterior wound in the abdominal wall was found to be united by "first intention." Within the abdomen, on the right side, reaching from the 11th rib almost to the crest of the ilium, a mass of inflammatory tissue bound together the liver, large intestine, and the abdominal wall. The liver to the outer side of the gall-bladder was dragged downwards for a considerable distance, and presented at this part a rather elongated tongue which was firmly adherent to the abdominal wall externally, and on its inner aspect to the ascending colon, and hepatic flexure. At the lower extremity of this portion of the liver was a small abscess through which the drainage tube passed. Between the liver and the abdominal wall below it on the outside, and the colon on the inside, was a large smooth walled cavity. It was ovoid in shape, its longest diameter being from above downwards; its upper extremity was at the hepatic flexure of the colon, its lower end nearly as low as the crest of the ilium. The drainage tube rested within this cavity. It was connected on the outside, through the orifice formed by the operation, with the small hepatic abscess; and on the inside, near its upper end with the large intestine by a rather large opening. About an inch below the edge of the liver there was a small ragged ulcerated patch in the abdominal wall where the abscess was evidently pointing. Behind the kidney was cut off from this abscess cavity by a mass of inflammatory tissue. The liver weighed 58 ounces, and appeared to be perfectly healthy in all respects, beyond the small focus of suppuration. The large intestine presented throughout its whole length from the cæcum to the anal orifice numerous dysenteric ulcers. As before mentioned it was in connection by a rather large orifice, with the cavity outside it, at the termination of the ascending colon.

Besides the ulcer, which perforated the whole intestinal wall, and communicated with the abscess cavity, there was another ulcer, which had also perforated the intestine, but was shut off from the abscess cavity by a thick layer of inflammatory tissue. Though the communication between the intestine and the abscess was of large size, when the parts were forcibly separated from each other, it is not at all clear that the orifice was of such size before the parts were so separated.

The stomach was enormously enlarged, and contained about two pints of bile-stained fluid. The duodenum was distended to at least twice its normal calibre. A mass of inflammatory tissue was adherent to its anterior aspect near its termination, which served to separate it from the abscess cavity.

All other organs appeared to be healthy.

Remarks:—The sequence of the pathological changes in this case appears to have been as follows:—

(1.) An attack of dysentery in 1885.

This would appear to have run a rather latent course, as he never reported sick on this account. But it is probable it became chronic in nature, and persisted until his death.

The three attacks of illness, returned as hepatitis were, doubtless, really dependent on attacks of localized peritonitis, and marked the dates of the perforation of the intestine, and the commencement of the formation of the abdominal abscess.

(2.) An ulcer in the colon perforated the mucous and muscular layers of the intestine, and reaching its serous coat, set up a localized peritonitis on its external surface. From this resulted an inflammatory exudation, which, becoming organised, set up adhesions between the intestine and the surrounding organs. The formation of an abscess in this inflammatory exudation depended, either upon the septic influences transmitted through the serous

coat of the intestine, or on the leakage of some of the intestinal contents through a small opening in the serous coat, which set up a purulent inflammation, just as in urethral stricture the leakage of a small quantity of urine behind the constricted part causes the formation of an abscess in the subjacent tissues.

The abscess so formed, gradually increased until it assumed the large size presented at the post-mortem examination. The communication between the abscess and the intestine cannot have been of a free nature, as no sign of pus was at any time detected in the stools, though carefully looked for, and no fœcal smell was present in the discharge from the abscess through the drainage tube. Moreover it is improbable that the abscess would "point" by ulceration of the abdominal wall if there had been free egress for its contents into the intestine. As before indicated, it seems probable that the large orifice of communication found post-mortem, was either due to the tearing of the tissues during the post-mortem examination, or to the force of the fluid used in washing out the cavity by irrigation after the operation.

(3.) The small hepatic abscess was the result of a localised hepatitis in a portion of the liver in contact with the abdominal abscess. It would appear that this was induced by the same process, in the progress of the contents of the primary abscess towards the surface, as that which induced ulceration of the inner surface of the abdominal wall just below the edge of the liver.

This distension of the stomach and duodenum was due to the obstruction of the latter caused by the pressure of the abscess, which lay over its anterior aspect as it passed in front of the spine. The vomiting and interference with the digestion resulting from this condition of the stomach were the immediate causes of death.

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## APPENDIX No. VI.

## CASE OF INTESTINAL OBSTRUCTION.

By Surgeon J. E. NICHOLSON, Medical Staff.

Private P. S—, 2nd Battalion, Loyal North Lancashire Regiment, æt. 19½ years, was admitted to the Station Hospital, Fort Regent, Jersey, for “dyspepsia,” which disease was subsequently changed to “obstruction of intestines.”

The patient had felt abdominal pains, chiefly referred to the epigastrium and umbilical region, for over a year, and although he had been treated occasionally for dyspepsia, constipation, and colic, yet had rarely reported himself sick. His medical history sheet only showed a single admission to hospital during the whole of his service (18 months), and this was for a severe sprain of one of his ankles, which happened last Boxing Day. Whilst in hospital on this occasion he was treated for dyspepsia, and also twice for slight colic. He was discharged to duty at the end of January, completely cured of his sprained ankle, and was not again seen as a patient by me until the 1st July, as, although he suffered at times from colicky pains, he did not consider it necessary to come to hospital.

Previous history.

On admission to hospital on the 28th June 1889 (supposed to be the second completed day of his present illness) he was treated for dyspepsia and given rhubarb and bicarbonate of soda, and on the 30th June (fourth day) as he had had no action of the bowels, and possibly suffered from colic and tympanites, he was successively ordered a simple enema, some turpentine enemata, castor oil and opium (which was vomited), an aperient pill, and some hot fomentations locally to the abdomen. On 1st July (fifth day) he had severe vomiting, which was said to be of a fæcal character. He was given opium and belladonna to relieve peristalsis.

History of case.

When seen by myself this afternoon at 6 p.m. (on return from leave of absence), I found the patient in great pain, with his abdomen greatly distended and tympanitic, passing a quantity of flatus per anum, and with bilious, *not* stercoraceous, vomiting. His abdomen was now gently rubbed with unguent. belladonnæ, and then covered with hot spongiopiline, with a little turpentine sprinkled over it. He was also ordered a castor oil enema, which was returned almost immediately without any effect. At 10 p.m. I carefully rubbed his abdomen for half an hour with ung. belladonnæ, chiefly over the whole arch of the colon. No hernia could be detected, and a digital examination of the rectum revealed nothing. His belly was now covered with hot spongiopiline and a flannel bandage, and he was shifted to a vacant ward in order to be kept undisturbed, and a special orderly was detailed to attend to him during the night. He was ordered a pint of beef tea, as he had not touched his food all day, and was told to sip it through a straw. N.B.—His food, which consisted of brandy, strong beef tea, port, jelly, barley water, &c., was always sipped through a small tube (except when given as nutritive enemata), until he died.

On the 2nd July (6th day of disease) massage was tried, and as the abdomen was greatly distended, a cradle was used to keep the weight of the clothes off the body. The same afternoon, two naturally-formed yellow motions were passed (without either medicine or enema). Massage was repeated the same



evening, with ung. belladonnæ as a lubricant, and followed up by hot fomentations.

On the following day (7th day) a small enema of glycerine and water was given, which caused a soft motion to be passed. He was now given a carminative mixture, which dispelled a quantity of flatus upwards by the mouth.

On the 4th July (8th day) a motion was passed after the injection of a glycerine enema; the same evening another action of the bowels occurred. On each of the three following days a voluntary motion was passed; there was no real motion passed afterwards until after the operation on the 16th July, possibly as the patient was given liq. opii sedativ. daily.

On the 8th July (12th day) a warm hip bath was tried, but this only gave relief for about an hour; on the following day an enema of assafœtida was given to try and relieve the tympanites.

On the 10th July (14th day) there was free vomiting, and for the first time unmistakably stercoraceous. An enema of glycerine and water this evening caused a slight motion to be passed. This contained three flakes of what appeared to be (mucous?) membrane when floated in water; they were about 2 inches long and from  $\frac{1}{2}$  to 1 inch wide.

On the 13th July (17th day) 3ss. of castor oil was given (at the patient's urgent request) as the intestinal obstruction was evidently incomplete, and as there had been no action of the bowels for six days. This evening hyperdistension of the large intestine was tried, but only 32 ozs. of warm water could be injected into the rectum, and this was soon rejected unaltered in colour. Previous to this, rectal bougies of different sizes had been easily passed for a distance of seven inches into the lower bowel.

Operation.

On July 15th (19th day) a consultation was held, and the abdomen was punctured in two places (in the middle point of the linea alba, and over the cœcum), but without any relief to the state of tension.

The next day (20th day), after a special consultation had been held, I performed laparotomy, under the antiseptic steam spray, with a view of discovering the seat and cause of the obstruction. As these could not be accurately made out, the most favourably presenting coil of intestine was punctured, but as its contents were not at all gaseous, it was then opened and its contents allowed to flow out for about 20 minutes. The opening was now stitched to the wound in the linea alba, so as to form an artificial anus, and the remainder of the abdominal wound closed with deep silk sutures, the peritoneal cavity having been first carefully sponged out. The patient had no vomiting after the anæsthetic nor for 36 hours after the operation, during which time the flow of fæces by the new anus was enormous.

On the 18th July (22nd day of disease, and 2nd day after operation) the patient had watery vomiting of a fæcal character, and the same afternoon he passed a clay-coloured stool "per vias naturales," in addition to a constant evacuation by the artificial anus.

On the afternoon of the 19th July (3rd day after operation) he complained of severe pain in the left inguinal region, which was treated with gentle inunction of ung. belladonnæ for about 20 minutes. Next day he suffered from a sharp colicky pain, which was followed by so abundant a discharge of watery fæces from the abdominal anus that he had to be moved to another bed. N.B.—After to-day the patient had no more abdominal pain, and seemed to feel general relief.

On July 21st (5th day after operation) I removed two of the stitches, which seemed very slack, as the wound in the linea alba had united, but the same afternoon the patient started kicking, and then suddenly sprang out of bed, and this severe effort on his part re-opened the lower half of the abdominal wound. The following day the bed was drenched with fluid which had escaped from the peritoneal cavity, and this watery discharge, accompanied by some thick black discharge, almost of tar-like consistence, lasted till his death.

On the 24th July (8th day since operation) he was placed on a water-bed, as he had some redness and tenderness over the sacrum and both trochanters; the wound to-day also had a less healthy look. The next day he had some dark-coloured vomiting.

On the 26th July (10th day) he passed a very large stool, after a warm enema, given specially for that purpose; his breathing to-day was laboured, and he appeared to be sinking.

On the 28th July (12th day) there was some congestion at the bases of both lungs, accompanied by some cough. The skin over the sacrum and trochanters was now twice daily rubbed with arnica and oil, as bedsores were threatening, and air-cushions would not remain steady on the water-bed.

On and after 29th July (6 days prior to death) he was given peptonized food only, which caused him to rally wonderfully for the next three days. He was also, about this time, given nutrient suppositories.

On the 1st August (16th day after operation) a small opening was discovered in the abdominal wound, not far from the artificial anus. This opening seemed to communicate with what appeared to be an encysted peritoneal abscess in the neighbourhood of the left inguinal region; this abscess was syphoned out twice daily with a warm solution of perchloride of mercury (1-20,000). A fulness was also detected in the pelvis on making a digital examination per rectum, and the hypogastrium was also rather prominently raised.

On the 2nd August the skin over the sacrum broke, and that same evening the patient appeared to be losing ground. He died quite quietly on the following day (3rd August), on the 38th day of disease, and the 18th day after the operation.

At the post-mortem examination held on 4th August, chronic peritonitis was found, with dense adhesions amongst the intestinal coils, and in the right iliac fossa. The pelvic cavity was filled with a thick brown liquid. There appeared to be an encysted peritoneal abscess-cavity in the left inguinal region, which communicated with a pathological opening in the linea alba, not far from the artificial anus. The mesenteric glands were very greatly enlarged. Post-mortem examination.

The ileum, at a spot about a foot from the ileo-cæcal valve, was found obstructed internally by a broad thick circular ring, which barely admitted the tip of the little finger. This at first was thought to be an epitheliomatous growth, as the mesenteric glands were enlarged, but a careful partial dissection of the peritoneal surface of the intestine seemed to discover a chronic invagination of the bowel, with incomplete obstruction. The intestine between the seat of obstruction and the ileo-cæcal valve was narrower than usual, and partly atrophied, but for nearly two feet above the obstruction the ileum was dilated, and its walls were greatly hypertrophied. In this same portion, and about a foot above the intussusception (?), was the artificial anus, adherent to the abdominal wall, about two inches below the umbilicus.

## APPENDIX No. VII.

## CASE OF SNAKE BITE.

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By Surgeon H. E. CREE, Medical Staff.

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About 5.15 p.m. on the 7th August 1889 a private in the 2nd Battalion East Yorkshire Regiment was placing an adder, which he had just found in the grass on Strensall Common, into his pocket when he was bitten on the tip of the index finger of the right hand. He immediately sucked the wound, but in less than two minutes the poison began to take effect on him. According to statement of two men who were with him he first complained of being unable to see, he then became faint, fell down, and soon began to froth at the mouth. He walked to the hospital with the assistance of the two men. When brought to the hospital he was only partially sensible, with pallid face and bloodless lips, and very convulsed.

He was seen by me in about fifteen minutes after being bitten; he was then in bed on his back with the knees drawn up and groaning with pain, which he referred to his belly. The face was lived and features swollen, with profuse perspiration running off forehead. The lips were now swollen and bright red in colour, with saliva frothing out of the mouth. Eyes open, pupils widely dilated. Sensible, and complaining of much pain in pit of stomach, and of great dryness of throat and mouth. On examining the mouth the tongue was found to be greatly swollen in front and of bright scarlet colour, and the whole mouth in much the same condition.

The skin cyanosed, cold to the hand, and bathed in a profuse clammy perspiration. Also lessening of the sensibility of the skin.

Absolutely pulseless at the wrist, not even the slightest fluttering could be made out.

Breathing was regular, but light.

Temperature less than 96° 8' F.

Inclined to vomit, retching frequently, flatulent.

The wounded finger was slightly swollen, and around the puncture there was a bluish discolouration.

Some pain was complained of in the finger, but not at all severe.

Prior to my arrival a mustard leaf had been applied over heart, and the extremities were being rubbed.

*Treatment.*—5.35 p.m. Not having any liq. ammon. I gave him a subcutaneous injection of liq. ammon. acet. m. xxx.

5.40 p.m. No improvement, the injection repeated.

5.55 p.m. No improvement, the injection repeated. Bilious vomiting. Pain in belly still severe.

6.15 p.m. No improvement, still quite pulseless; injection repeated.

6.30 p.m. The merest sensation of returning pulse at wrist. Brandy, 1 oz. Bilious vomiting. Pain in belly improving.

6.40 p.m. Less inclination to vomit. Spirit. ammon. arom. ℥ii. with ℥iss. of water given by the mouth.

Vomited after draught; about ten minutes. Becoming drowsy, ver strong hot coffee given. Slight improvement.

7.10 p.m. Pulse can now be counted 122 to the minute. Still, however, very weak. Brandy, ½ oz.

- 7.14 p.m. Hypodermic injection of liq. ammon. acet. m. xxx. repeated.
- 7.30 p.m. Not now sweating. Skin perceptibly warmer to the hand and not so blue. Tongue and mouth not so red and swollen. Cramps in abdomen much less. Pupils smaller and acting to light. No sickness. Pulse stronger. Brandy,  $\frac{1}{4}$  oz.
- 7.45 p.m. Draught of spirit. ammon. arom. m. xxx. by mouth. Milk.
- 8.45 p.m. Pulse, 100 to minute; stronger.
- 9 p.m. Temperature,  $99^{\circ}2$  F.
- 9.15 p.m. Pulse, 94 to minute; still improving in volume.
- 10 p.m. Draught of spirit. ammon. arom. m. xx. by mouth. Temperature,  $100^{\circ}2$  F. Pulse stronger, and patient now feels pretty comfortable.
- During this time there had been frequent inclination to pass water, probably due to the liq. ammon. acet.
- For the colic turpentine fomentations were applied over the abdomen without relief; a mustard poultice was then applied, which gave relief in some 10 minutes. The colic did not again return.
- He was in this completely pulseless state for over two hours.
- 8th Aug. Kept fairly well all night.
- Beef tea and milk as nourishment.
- Patient feels well this morning, but still complains of dryness of mouth and throat, and of some tenderness at pit of stomach.
- The whole hand and forearm up to the elbow joint is greatly swollen, hard, and brawny from diffuse cellulitis. Bluish discolouration around wound, not much pain complained of.
- Pulse strong and regular.
- Barrack rations. Brandy, 1 oz.
- Whole limb to be fomented frequently.
- 9th Aug. Transferred to Station Hospital, York, for further treatment.
- On admission to the Station Hospital, York, he was still prostrate and unable to walk without assistance. He complained of a burning pain referred to the back of the sternum, and general abdominal tenderness.
- The pain, he said, was unlike colic or soreness produced by vomiting. Its severity was such that he begged to be afforded some relief. He was therefore ordered an opiate. The right upper limb from the shoulder to the hand was much increased in size, hard, brawny, and discoloured.
- The axillary glands were enlarged and tender on pressure. The site of the bite was marked by a bluish black spot the size of a duck shot. The only subjective symptoms connected with the arm were feelings of weakness and stiffness. His temperature was raised a degree and a half.
- His urine contained a trace of albumen.
- 10th Aug. He expresses himself as feeling better, but is not yet free from the sternal and abdominal pain. There is no ulceration of the skin where the bite was inflicted.
- Temperature normal.
- 11th Aug. The swelling of the arm is subsiding. His urine is free from albumen.
- 13th Aug. The size of the injured limb is now reduced nearly to that of the other. The superficial lymphatics are still well seen by the ecchymosis along their course.
- 15th Aug. He was discharged from hospital to-day, feeling quite well, with the exception of some weakness in the right forearm and hand.

## REMARKS.

The snake which inflicted the bite was a viper. (*Pelias Berrus*.) It was identified by the following characters. Length, 21 inches. Head depressed and flattened—wider than neck. Three of the shields on the vertex much larger than the rest, and placed symmetrically, one in front, two behind. No teeth, except the poison fangs, in the upper jaws. A series of rhomboid black spots giving a zig-zag appearance to its back. Tail tapering rapidly and ending in a point.

Instances of viper bite are rare in medical literature, possibly from the fact that they seldom end fatally. In a case reported in the second volume of the

"British Medical Journal" for 1878 the symptoms were substantially the same as those above described. Suppression of urine, however, was observed.

Snake bites are now receiving greater attention from the recent investigations of Reichert, Weir-Mitchell, Wolfenden, and others into the nature of the poison.

It has been shown by them that the active element is a proteid, in all probability albumose.

It has long been known that the injection of peptone into the blood causes death, which is preceded by coma and convulsions. Snake venom and peptone alike totally prevent the coagulation of the blood.

Albumose and peptone are among the products of healthy digestion. It is interesting to note that another normal animal product has lately been discovered which even eclipses the snake poison in its rapidity of action. By introducing a small quantity of the juice expressed from the thymus gland into the veins of a rabbit, Norris Wolfenden has brought about instantaneous death through general intravascular clotting.

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## APPENDIX No. VIII.

REPORT OF THE MEDICAL TRANSACTIONS OF THE NILE  
FIELD FORCE, 1889.

By Deputy Surgeon-General J. JAMESON, Principal Medical Officer, Egypt.

During the month of May 1889 intelligence was received of a force of Dervishes from the Soudan moving north.

On the 2nd of July I received confidential instructions to submit a detailed statement of medical requirements for a force of 500 officers, non-commissioned officers, and men, who were to proceed to Assuan, there to be stationed. I was directed to assume that the force would not be engaged in active operations.

Arrangements were accordingly made for the equipment of an hospital for 50 beds, and two medical officers and 14 men of the Medical Staff Corps were detailed for duty at Assuan.

On the 8th July the 17 officers and 542 warrant officers, non-commissioned officers, and men left for Assuan.

The troops were sent to Assiout by rail, and embarked there on a stern wheel steamer and barges.

The medical officer in charge took with him, to meet a possible emergency, five pairs cacolets, five pairs litters, and 20 stretchers. The 20 stretchers were in addition to 9 in the hospital.

On the 3rd of July I was directed to make the necessary medical arrangements for a force of 1,500 to proceed up Nile for active operations there.

The troops detailed for service, in addition to those which left on the 8th July, numbered 89 officers and 1,728 warrant officers, non-commissioned officers, and men.

To afford medical and surgical assistance for such a force a field hospital of 100 beds was organised, and, in the arrangement, due regard was paid to the season of the year, and the prevailing conditions existing in the Soudan.

A camel bearer company capable of transporting 100 sick and wounded was also completed.

The equipment of the field hospital and bearer company was sent by rail to Assiout, and thence by steamer and barges up river to Assuan.

The establishment of medical staff and medical staff corps authorised for Egypt having been calculated on a peace basis was unable to meet the demand suddenly made upon it, and the general officer commanding, at my suggestion, telegraphed to Malta for three surgeons and 30 non-commissioned officers and men, which request for assistance was promptly responded to.

To complete the personnel of the field hospital and bearer company nine medical officers and 61 men of the Medical Staff Corps were quickly sent from England. Pending arrival of reinforcements the medical officer appointed to the charge of the bearer company, in order to render it effective, was directed to take from the hospital establishment at Assuan as many men as could be spared, and to hire natives to form stretcher parties.

It was calculated that when the field hospital was equipped there would be at Assuan 150 beds available, and by using two parts of a mattress instead of three the number could be increased by one third, should the necessity arise for a greater amount of hospital accommodation. The cases, slip bed, filled with chopped straw could have been utilized to form additional beds. The number of native bedsteads procurable on the spot was practically unlimited. The carrying power for sick and wounded was:—

|            |   |   |   |   |   |               |
|------------|---|---|---|---|---|---------------|
| Cacolets   | - | . | . | - | - | 37 = 74 sick. |
| Litters    | . | . | . | . | - | 23 = 46 "     |
| Stretchers | - | . | . | . | - | 100 = 100 "   |
| Total      | - | . | . | . | - | 220 sick.     |

In a previous expedition up Nile an ice machine had been taken to Assuan. A party of Royal Engineers rapidly put it in good working condition, and a plentiful supply of ice was daily manufactured and supplied to the sick in hospital.

The stern wheel steamer "Alexandra" had been used in previous expeditions, and was again fitted up as a hospital ship. It provided fairly good accommodation for the transport of three sick officers and 26 sick non-commissioned officers and men. She was intended to carry sick between Assuan and Assiout.

A railway carriage built on the American plan, and formerly used for carrying the mails to Suez, was converted into an ambulance carriage. Special stretchers placed on spiral springs made most comfortable beds. Eight "lying down" cases could be carried on each trip from Assiout to Cairo, and in case of necessity ordinary first and second class railway carriages were available in any number. The ambulance carriage was fitted with a cooking range, had cupboards for medical stores and an ice chest, and was in charge of a non-commissioned officer and two men of the Medical Staff Corps. It was sent to Assiout to await the arrival of sick from up river.

As the British force began to concentrate at Assuan the question of accommodation arose. A certain number of huts, formerly erected, were still standing at North End on the river bank, and some on "Tagoog Heights" about a mile by road. Tagoog Heights possessed certain advantages over "North End" in point of elevation and sanitation. It possessed, however, the disadvantage of being entirely without shade, in radiating heat until a late hour, and having no water supply nearer than the Nile. The position was considered by the military authorities one difficult to hold in case of attack, and the North End was consequently chosen.

The heat being very great the huts at North End were rapidly placed in a habitable condition, by repairing roofs and verandahs, and in paying due attention to the sanitary conditions.

The Sirdar, in the desire to have as much hut accommodation as possible for the use of the troops, suggested that certain steamers then lying at Assiout might be used as hospital ships, and thus obtain for the use of the men the huts which had been handed over as a hospital. After inspecting the steamers referred to, I expressed an opinion that they contained superficial area sufficient for our requirements. Their machinery, however, was beyond repair, and means did not exist to get the steamers towed to Assuan, the project was therefore abandoned.

On the 24th the "Alexandra," with an acting superintending sister and a nursing sister on board, and a complement of one non-commissioned officer, one cook, and three privates, Medical Staff Corps, left Cairo *en route* to Assuan.

Hygienic notes of a practical kind were given to the medical officers proceeding on service.

The force intended for active service, and all the medical, surgical, commissariat, and ordnance supplies having been despatched, I left on the 26th of July for Assuan to assume the direction of the medical service up Nile.

I arrived at Assuan on 30th July, passing *en route* the Welsh Regiment, Royal Artillery, Mounted Infantry, and details of various corps. The squadron of 20th Hussars had already left for Korosko in medical charge of Surgeon Donnet, Medical Staff. This officer had with him one sergeant and two privates of the Medical Staff Corps, ample medical and surgical equipment, medical comforts, and equipment for 10 beds.

Surgeon-Major O. G. Wood proceeded from Assuan to Korosko on the 30th July to establish a hospital of 50 beds there.

The hospital at Assuan, under charge of Surgeon H. O. Stuart, was in good working order on my arrival there. The sick, accommodated in huts, were well cared for, and supplies were abundant and good. An officer of the 2nd Battalion Royal Irish Rifles was suffering from small-pox, and had been removed to a house at some distance from the camp. One case of enteric fever had been admitted, and some cases of diarrhoea and dysentery were under treatment.

It was conjectured that the scene of the expected battle would be at a point near the river at some place south of Korosko. To meet any emergency which might arise I made arrangements for the fitting up of a dahabeyah, or Nile boat, as a floating hospital with accommodation for 50 sick. A suitable boat having been procured a temporary roof was rapidly fixed over the deck, stores were shipped, and the boat in tow of a steamer left Shellal.

The troops hurrying to the front were accommodated in steamers, barges, and dahabeyahs, and medical officers were attached to the different units.

The field hospital and bearer company equipment, in tow of steamers, was in advance of the main body of the force.

On the 3rd of August, in company with the Major-General Commanding and Staff, I proceeded to Korosko and arrived there on the following day.

Surgeon-Major Wood had lost no time in equipping a hospital, and sheds previously used by Egyptian troops gave very fair accommodation.

The Major-General received intelligence of the successful engagement at Toski on the 3rd, and the British force was ordered to return to Assuan.

Up to this time the health of the force was excellent, notwithstanding the great heat experienced and the hard work endured in the desire to get to the front expeditiously.

The only part of the British force engaged at Toski was a squadron of the 20th Hussars, in medical charge of Surgeon J. J. C. Donnet. Arriving at Toski on the 2nd of August, Surgeon Donnet with the equipment in charge speedily got a tent pitched, and by using the stretchers formed fairly comfortable beds.

On the 3rd of August, Surgeon Donnet paraded at an early hour with the troops, and had cacolets and litters fitted on to camels for service in the field. At 5.30 a.m. the engagement commenced. No man of the Hussars was wounded until 2 p.m., when the following casualties occurred :—

Killed.—Private —. Spear wound of abdomen. Wounded severely.—Corporal —. Bullet wound, middle third of right tibia; Private —. Bullet wound in right groin, two sword cuts on head, and a spear wound in left buttock. Wounded slightly.—Private —. Bullet wound of outer surface of right arm (ricochet). Trumpeter —. Slight spear wound of left hand. Private —. Contusion from fall from his horse during a charge.

All the wounded had field dressings applied at once, and at 5 p.m. they were safely transported to the hospital tent and redressed antiseptically. Brandy and milk were given on the field, and on arrival in hospital they received cocoa, extractum carnis, brandy and milk. The men expressed themselves as comfortable, and at bed time opium was given hypodermically. Next day Corporal — was chloroformed, and a bullet and some pieces of cloth embedded in the tibia were removed, and the wound dressed antiseptically. On the 5th the three men slightly wounded returned to duty, but the two severe cases in charge of Surgeon Myles, with three men of the Medical Staff Corps in attendance, were transferred to Assuan by river steamer, where they arrived safely.

On arrival at Assuan the troops were again stationed at North End, some in huts and others on board steamers and barges. When arrange-



ments had been completed the force was despatched down river in the same manner as they came up.

An officer of the 2nd Battalion Royal Irish Rifles and one man of the 1st Battalion Welsh Regiment were accidentally drowned in the river above Shellal.

A number of Dervish wounded arrived at Assuan while the British force was awaiting embarkation for Cairo. Having been informed that the Egyptian Medical Staff was in want of assistance, I ordered three surgeons, Medical Staff, to report themselves for temporary duty at the Egyptian hospital. These gave their assistance in the dressing of cases, and relieved in some degree the pressure of work.

The hospital at Assuan was evacuated and the sick transferred to the "Alexandra," which, with two medical officers, two nursing sisters, and a complement of Medical Staff Corps, sailed for Cairo, the last of the troops having left on the same day.

It will be seen from the return annexed that while actually on service the troops were healthier, or apparently healthier, than in Lower Egypt; and that during the period which this return embraces (viz., from 8th July to 12th August) six officers and 117 non-commissioned officers and men were treated in hospital, and there was one death. It must be noted, however, that the period was short, and the effects of service were not manifested until the return of the force to Cairo.

In the five weeks following the completion of the service up Nile there were, in an average strength of 2,973, 571 admissions to the station hospital, Cairo. Of these admissions, simple continued fever gave 179, enteric fever 50, dysentery 22, diarrhoea 63, and liver complaints 7. The remaining 250 being for various diseases. The deaths in the five weeks amounted to 12, due chiefly to enteric fever.

The corps which were the most sickly were the 2nd Battalion Royal Irish Rifles, and the squadron of the 20th Hussars; these were the corps which were absent longest, were furthest up river, and which, consequently, endured the greatest amount of fatigue and exposure to the sun. The 20th Hussars were of exceptionally fine physique, and were seasoned troops. The men of the Royal Irish Rifles in point of physique and age were about the average. Both of these corps after their return to Cairo had over 15 per cent. of sick in hospital at one time.

The 1st Battalion Welsh Regiment was a shorter time up Nile than the Royal Irish Rifles, and embarked for Malta immediately on its return to Lower Egypt, so that the effects of service on it are unknown.

The 2nd Battalion King's Own Scottish Borderers was turned back before reaching Assuan, and having been all the time on steamers and barges the health of the men was not impaired.

In an expedition like the present one, men are, owing to military necessity, hurried up the river, and transport of the best kind is not available in the country. Barges and steamers must be employed, and although of a somewhat primitive kind, I do not believe they are unhealthy. The climate is such that men are practically living in the open, and air always in motion can never become actually vitiated.

The water supply is from the Nile. The river was in flood and brown in colour from alluvium. The native drinks the water with impunity, and his system has probably adapted itself to its use, on the Darwinian principle of heredity and the survival of the fittest.

An attempt was made to use filtered water for drinking and cooking purposes, but failed. Water was invariably drawn from the centre of the river, and placed in native zeers (filters). The process of filtration is exceedingly slow, the zeer being simply a dripstone, acting mechanically and very slowly, the water falling drop by drop into a vessel underneath. Zeers were placed in dozens along the decks, but the quantity of filtered water yielded was by no means sufficient, and became less as the interstices of the zeer gradually became choked.

The weather was hot and dry, and thirst was great. A man seeking a drink made his way to the zeer, and finding an insufficient quantity of filtered water, without hesitation filled his pannikin from the zeer. A good

filter is much required for Nile service. Two kinds of Filtre Rapide of Maignien were used in the hospital at Assuan. The Filtre Maignien (Nile boat) was found difficult to open and clean, and contained no written instructions regarding its management.

The Camel Filtre Maignien has full directions for use, and for practical purposes is much better than the other.

The troops which were in advance up the river had much fatigue duty to perform in embarking and disembarking stores, besides the ordinary fatigue duties of the camp. A good deal of it might be avoided by hiring native labour whenever procurable, and I think the saving in life would be worth the cost.

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APPENDIX IX.

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## APPENDIX

## Annual Abstract of Meteorological Observations taken

NETLEY.

Lat. 50° 51' N.

| Month.      | Mean Pressure. | Air Temperature. |          |      |           |      |           |      |           | Tension of Vapour. | Relative Humidity. |      |  |
|-------------|----------------|------------------|----------|------|-----------|------|-----------|------|-----------|--------------------|--------------------|------|--|
|             |                | Mean, 9 a.m.     | Means of |      | Abs. Min. |      | Abs. Max. |      | Per Cent. |                    | Minimum.           |      |  |
|             |                |                  | Min.     | Max. | Temp.     | Day. | Temp.     | Day. | Mean.     |                    | Per Cent.          | Day. |  |
|             |                |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| January -   | 30°180         | 37.4             | 33.5     | 44.9 | 22.0      | 30th | 54.0      | 23rd | 215       | 85.0               | 42.0               | 28th |  |
| February -  | 29°907         | 35.3             | 30.8     | 42.1 | 19.0      | 2nd  | 54.0      | 4th  | 188       | 83.0               | 55.5               | 23rd |  |
| March -     | 29°562         | 39.3             | 33.1     | 47.0 | 23.0      | 2nd  | 55.0      | 10th | 221       | 84.8               | 65.0               | 3rd  |  |
| April -     | 29°862         | 44.7             | 37.1     | 51.9 | 26.0      | 6th  | 60.0      | 14th | 264       | 77.0               | 63.0               | 6th  |  |
| May -       | 30°000         | 54.9             | 42.8     | 62.2 | 33.0      | 11th | 72.3      | 23rd | 336       | 71.3               | 55.0               | 9th  |  |
| June -      | 29°868         | 58.9             | 49.7     | 67.1 | 40.0      | 18th | 82.0      | 25th | 407       | 75.0               | 37.0               | 18th |  |
| July -      | 29°728         | 59.5             | 52.2     | 67.1 | 42.3      | 11th | 73.0      | 13th | 434       | 80.0               | 61.5               | 11th |  |
| August -    | 29°964         | 60.9             | 52.0     | 68.2 | 44.8      | 14th | 82.0      | 9th  | 449       | 81.0               | 66.0               | 5th  |  |
| September - | 30°086         | 59.0             | 47.9     | 68.0 | 38.0      | 12th | 75.3      | 16th | 430       | 79.0               | 64.0               | 7th  |  |
| October -   | 30°013         | 48.5             | 39.1     | 58.3 | 20.8      | 15th | 68.0      | 27th | 314       | 81.0               | 51.0               | 15th |  |
| November -  | 29°712         | 48.3             | 43.4     | 54.2 | 31.2      | 6th  | 59.0      | 14th | 315       | 84.1               | 63.5               | 21st |  |
| December -  | 29°830         | 42.7             | 37.3     | 50.1 | 27.0      | 11th | 58.4      | 6th  | 272       | 89.0               | 75.0               | 26th |  |
| Mean        | 29°901         | 49.0             | 41.6     | 56.8 | 31.1      | —    | 66.1      | —    | 320       | 81.2               | 58.2               | —    |  |

GIBRALTAR.

Lat. 36° 6' 20" N.

|             |        |      |      |      |      |      |      |      |     |      |      |      |  |
|-------------|--------|------|------|------|------|------|------|------|-----|------|------|------|--|
| January -   | 30°235 | 55.3 | 51.3 | 60.1 | 40.2 | 31st | 65.1 | 18th | 372 | 81.0 | 62.0 | 30th |  |
| February -  | 29°946 | 51.9 | 46.9 | 57.9 | 39.5 | 1st  | 64.4 | 13th | 305 | 74.0 | 52.0 | 28th |  |
| March -     | 30°010 | 57.1 | 52.0 | 62.6 | 55.4 | 20th | 73.0 | 10th | 367 | 76.0 | 51.0 | 20th |  |
| April -     | 29°979 | 60.4 | 53.7 | 66.2 | 58.2 | 7th  | 72.2 | 18th | 386 | 79.0 | 42.0 | 13th |  |
| May -       | 30°066 | 66.0 | 60.1 | 70.6 | 53.0 | 16th | 76.9 | 31st | 450 | 70.0 | 40.0 | 30th |  |
| June -      | 30°039 | 71.8 | 64.3 | 78.3 | 58.6 | 21th | 88.6 | 30th | 483 | 62.2 | 39.0 | 16th |  |
| July -      | 30°063 | 74.1 | 65.7 | 81.0 | 60.8 | 10th | 88.6 | 25th | 539 | 62.4 | 36.0 | 29th |  |
| August -    | 30°120 | 73.5 | 67.2 | 80.9 | 61.8 | 21st | 88.6 | 22nd | 533 | 63.0 | 33.0 | 29th |  |
| September - | 30°055 | 71.1 | 65.1 | 77.1 | 40.8 | 2nd  | 83.4 | 4th  | 566 | 73.1 | 46.4 | 18th |  |
| October -   | 30°122 | 65.9 | 62.6 | 70.0 | 57.0 | 5th  | 80.2 | 1st  | 490 | 77.0 | 49.4 | 4th  |  |
| November -  | 30°216 | 60.0 | 56.3 | 65.8 | 50.4 | 15th | 70.0 | 10th | 412 | 77.8 | 43.0 | 3rd  |  |
| December -  | 30°090 | 57.1 | 54.3 | 60.0 | 46.2 | 23rd | 66.0 | 3rd  | 389 | 80.0 | 53.0 | 5th  |  |
| Mean -      | 30°078 | 63.7 | 58.3 | 69.2 | 51.8 | —    | 76.4 | —    | 441 | 73.0 | 46.6 | —    |  |

MALTA.

Lat. 35° 53' 49" N.

|             |        |      |      |      |      |        |      |           |     |      |      |      |  |
|-------------|--------|------|------|------|------|--------|------|-----------|-----|------|------|------|--|
| January -   | 30°090 | 53.8 | 50.7 | 56.9 | 44.6 | 15th   | 63.0 | 2nd, 31st | 314 | 74.2 | 55.8 | 14th |  |
| February -  | 29°838 | 54.4 | 50.8 | 57.9 | 45.8 | 29th   | 64.0 | 23rd      | 317 | 73.8 | 53.2 | 8th  |  |
| March -     | 29°919 | 58.5 | 53.6 | 62.6 | 46.2 | 6th    | 77.4 | 27th      | 365 | 71.0 | 53.0 | 29th |  |
| April -     | 29°911 | 63.5 | 57.6 | 67.7 | 54.0 | 14th   | 78.2 | 7th       | 414 | 69.5 | 56.4 | 24th |  |
| May -       | 29°964 | 66.4 | 61.3 | 70.2 | 58.2 | 7, 8th | 75.2 | 10, 12th  | 506 | 77.0 | 54.2 | 10th |  |
| June -      | 29°959 | 75.8 | 70.0 | 80.7 | 63.4 | 1st    | 87.4 | 30th      | 653 | 71.3 | 45.2 | 9th  |  |
| July -      | 29°967 | 80.3 | 74.5 | 85.1 | 68.2 | 4th    | 96.2 | 10th      | 702 | 67.0 | 36.4 | 10th |  |
| August -    | 29°993 | 78.2 | 72.8 | 81.9 | 69.6 | 21st   | 93.4 | 17th      | 611 | 63.8 | 44.6 | 2nd  |  |
| September - | 30°025 | 77.8 | 73.0 | 81.6 | 67.2 | 30th   | 86.8 | 10th      | 676 | 71.8 | 59.0 | 8th  |  |
| October -   | 30°016 | 69.5 | 64.8 | 72.5 | 55.2 | 21st   | 84.8 | 2nd       | 488 | 66.0 | 51.0 | 21st |  |
| November -  | 30°062 | 63.9 | 59.7 | 68.7 | 62.2 | 25th   | 75.0 | 2nd       | 428 | 70.4 | 47.4 | 13th |  |
| December -  | 30°024 | 59.9 | 56.4 | 62.2 | 53.0 | 14th   | 70.4 | 1st       | 396 | 73.3 | 53.8 | 11th |  |
| Mean -      | 29°963 | 66.8 | 62.1 | 70.7 | 57.3 | —      | 79.3 | —         | 489 | 70.7 | 51.3 | —    |  |

## No. IX.

at Netley and Foreign Stations in the Year 1888.

Long. 1° 20' W. Height of Barometer Cistern above Sea, 47 feet.

| Mean Amount of Cloudiness. | Rainfall. |      |      | Weather.          |       |       |                |      |            |           |        | Wind.                                             |      |     |      |     |      |     |      |       |
|----------------------------|-----------|------|------|-------------------|-------|-------|----------------|------|------------|-----------|--------|---------------------------------------------------|------|-----|------|-----|------|-----|------|-------|
|                            | Total.    | Max. | Day. | Number of Days of |       |       |                |      |            |           |        | Means of Observations under each Point per Month. |      |     |      |     |      |     |      |       |
|                            |           |      |      | Rain.             | Snow. | Hail. | Thunder Storm. | Fog. | Clear Sky. | Overcast. | Gales. | N.                                                | N.E. | E.  | S.E. | S.  | S.W. | W.  | N.W. | Calm. |
|                            |           |      |      |                   |       |       |                |      |            |           |        |                                                   |      |     |      |     |      |     |      |       |
| 6.5                        | 1.14      | 0.23 | 2nd  | 17                | 1     | —     | —              | 4    | 6.5        | 17        | 1      | 1.0                                               | 8.0  | 1.0 | 4.0  | 0.5 | 8.5  | 0.5 | 7.5  | —     |
| 7.5                        | 0.08      | 0.34 | 13th | 10                | 5     | —     | —              | —    | 1          | 18.5      | 1      | 4.5                                               | 12.5 | —   | —    | —   | 5.5  | 1.5 | 5.0  | —     |
| 8.2                        | 3.71      | 0.47 | 8th  | 20                | 5     | —     | —              | —    | 2          | 22.5      | 3      | 3.5                                               | 6.0  | 1.5 | 3.0  | —   | 10.0 | 1.0 | 6.0  | —     |
| 7.5                        | 1.89      | 0.61 | 23rd | 15                | 2     | —     | —              | —    | 5          | 18        | 2      | 1.5                                               | 12.0 | —   | 3.0  | —   | 0.0  | 2.0 | 2.5  | —     |
| 6.1                        | 2.20      | 0.56 | 17th | 8                 | —     | —     | —              | —    | 8          | 13.5      | 4      | 1.5                                               | 6.0  | 0.5 | 7.5  | 0.5 | 12.5 | 1.0 | 1.5  | —     |
| 8.0                        | 3.62      | 0.64 | 27th | 21                | —     | 2     | 2              | —    | 1.5        | 18.5      | 4      | 1.5                                               | 8.0  | —   | 5.5  | —   | 11.5 | 1.5 | 2.0  | —     |
| 8.5                        | 6.57      | 1.46 | 31st | 25                | —     | —     | —              | —    | 1          | 24        | 1      | —                                                 | 2.0  | —   | 5.0  | 1.0 | 15.0 | 2.0 | 6.0  | —     |
| 6.5                        | 2.90      | 0.93 | 28th | 19                | —     | —     | 1              | —    | 4.5        | 13.5      | 2      | 1.5                                               | 5.0  | —   | 1.5  | 2.0 | 14.5 | 0.5 | 6.0  | —     |
| 5.9                        | 0.92      | 0.20 | 29th | 12                | —     | —     | —              | —    | 6          | 10        | —      | 1.5                                               | 11.5 | 1.0 | 3.0  | 0.5 | 7.0  | —   | 5.5  | —     |
| 8.0                        | 1.74      | 0.67 | 29th | 11                | —     | —     | —              | —    | 5.5        | 11        | —      | 3.0                                               | 4.0  | 1.0 | 6.5  | —   | 9.0  | —   | 7.5  | —     |
| 8.5                        | 5.30      | 0.83 | 12th | 26                | 1     | —     | —              | 1    | —          | 24        | 9      | —                                                 | 2.5  | 3.0 | 7.0  | 0.5 | 16.0 | 0.5 | 0.5  | —     |
| 7.2                        | 1.96      | 0.46 | 27th | 17                | —     | —     | —              | 2    | 3.5        | 18.5      | 2      | 3.0                                               | 3.0  | 1.0 | 10.0 | 1.5 | 11.0 | —   | 1.5  | —     |
| 7.3                        | 2.239     | 0.62 | —    | 17.0              | 1.5   | 0.2   | 0.2            | 0.6  | 3.3        | 17.0      | 2.0    | —                                                 | 6.7  | 0.7 | 4.0  | 0.5 | 11.4 | 0.9 | 4.3  | —     |

Long. 5° 20' 53" E. Height of Barometer Cistern above Sea, 53 feet.

|     |       |      |      |     |   |   |      |    |      |      |     |      |      |      |     |     |     |      |      |     |
|-----|-------|------|------|-----|---|---|------|----|------|------|-----|------|------|------|-----|-----|-----|------|------|-----|
| 6.0 | 4.20  | 1.36 | 1st  | 12  | — | — | —    | —  | 9.5  | 14.0 | —   | —    | 5.0  | 18.5 | —   | —   | 1.0 | 3.5  | 3.0  | —   |
| 5.0 | 4.63  | 1.24 | 14th | 13  | — | — | —    | —  | 12.0 | 11.0 | 1   | —    | 5.0  | 1.5  | 5.0 | —   | 1.5 | 11.0 | 4.5  | —   |
| 6.0 | 12.89 | 6.05 | 1st  | 18  | — | — | —    | —  | 6.5  | 13.5 | —   | —    | 1.5  | 1.5  | 2.0 | 0.5 | 3.0 | 8.5  | 12.5 | 1.5 |
| 6.0 | 5.25  | 0.93 | 25th | 6   | — | — | —    | —  | 6.0  | 13.0 | —   | —    | 0.5  | 7.5  | —   | —   | 6.0 | 12.5 | 3.5  | —   |
| 4.0 | 0.75  | 0.25 | 25th | 7   | — | — | —    | —  | 16.5 | 7.5  | —   | —    | 5.0  | 3.5  | 5.0 | —   | 1.5 | 11.0 | 4.5  | 0.5 |
| 2.0 | 0.31  | 0.25 | 23rd | 3   | — | — | —    | —  | 23.5 | 3.5  | —   | —    | 7.5  | 3.0  | —   | —   | 5.5 | 12.0 | 2.0  | —   |
| 2.0 | —     | —    | —    | —   | — | — | —    | 1  | 26.0 | 3.0  | 1   | —    | 4.5  | 6.0  | —   | —   | 9.0 | 11.0 | 5    | —   |
| 2.0 | 0.07  | 0.07 | 16th | 1   | — | — | —    | —  | 27.5 | 2.5  | —   | —    | 18.0 | 6.5  | —   | —   | 4.0 | 1.0  | 2.5  | —   |
| 5.0 | 2.77  | 1.25 | 21st | 10  | — | — | 1    | 1  | 10.0 | 9.5  | —   | —    | 7.5  | 10.5 | 0.5 | 0.5 | 1.0 | 9.5  | 0.5  | —   |
| 5.0 | 5.46  | 2.38 | 11th | 8   | — | — | —    | —  | 17.0 | 23.0 | —   | —    | 12.0 | 9.5  | 1.0 | —   | 2.5 | 2.5  | 3.5  | —   |
| 5.0 | 4.98  | 1.50 | 30th | 11  | — | — | —    | —  | 11.5 | 7.5  | —   | —    | 10.0 | 8.0  | 0.5 | 0.5 | 1.5 | 9.0  | 0.5  | —   |
| 6.0 | 7.46  | 1.25 | 13th | 21  | — | — | —    | —  | 4.5  | 18.0 | —   | 5    | 2.5  | 12.0 | 1.0 | —   | 3.0 | 6.0  | 6.0  | —   |
| 4.5 | 4.06  | 1.38 | —    | 9.2 | — | — | 0.08 | .2 | 14.1 | 8.8  | 0.2 | 0.04 | 6.6  | 7.3  | 1.3 | 0.1 | 3.3 | 8.1  | 3.6  | 0.2 |

Long. 14° 30' 54" E. Height of Barometer Cistern above Sea, 70 feet.

|     |      |      |      |     |   |      |     |   |      |      |     |     |      |     |     |      |     |     |      |      |
|-----|------|------|------|-----|---|------|-----|---|------|------|-----|-----|------|-----|-----|------|-----|-----|------|------|
| 5.0 | 2.88 | 0.72 | 10th | 10  | — | —    | —   | — | 9.0  | 10.5 | —   | 4.0 | 10.0 | 2.0 | 3.0 | —    | 3.5 | 2.0 | 6.5  | —    |
| 4.0 | 2.27 | 0.68 | 19th | 10  | — | —    | 2   | — | 14.5 | 3.5  | —   | 1.5 | 1.5  | 1.0 | 5.5 | 2.5  | 2.0 | 5.5 | 9.5  | —    |
| 4.2 | 0.86 | 0.35 | 5th  | 6   | — | —    | —   | — | 12.5 | 5.0  | —   | 1.5 | 3.0  | —   | 5.0 | —    | 5.5 | 5.5 | 10.5 | —    |
| 4.0 | 0.06 | 0.06 | 27th | 1   | — | —    | —   | — | 9.5  | 2.0  | —   | 2.0 | 3.0  | 0.5 | 7.0 | —    | 5.0 | 1.0 | 11.5 | —    |
| 4.1 | 1.38 | 0.81 | 26th | 7   | — | —    | 2   | — | 13.0 | 3.0  | —   | 1.0 | 8.5  | 1.0 | 8.5 | —    | —   | 0.5 | 11.5 | —    |
| 2.0 | —    | —    | —    | —   | — | —    | —   | — | 26.5 | —    | 3.5 | 0.5 | 6.0  | 2.5 | 5.5 | 0.5  | 1.5 | 1.0 | 12.5 | —    |
| 1.2 | —    | —    | —    | —   | — | —    | —   | — | 29.5 | —    | —   | 3.0 | 4.5  | 1.5 | 5.0 | 1.5  | 2.0 | —   | 13.5 | —    |
| 1.0 | —    | —    | —    | —   | — | —    | —   | — | 24.5 | —    | —   | 2.5 | 6.0  | 0.5 | 1.5 | 0.5  | 3.0 | 2.5 | 14.5 | —    |
| 2.2 | 0.79 | 0.79 | 17th | 1   | — | —    | 1   | — | 18.5 | 2.0  | —   | 2.0 | 5.0  | 3.0 | 8.5 | 0.5  | 2.5 | 1.0 | 7.5  | —    |
| 3.0 | 3.97 | 2.75 | 11th | 7   | — | —    | 3   | — | 17.5 | 4.0  | —   | 1.0 | 4.0  | 2.0 | 7.5 | 1.5  | 1.5 | 2.5 | 11.0 | —    |
| 4.0 | 1.14 | 0.79 | 18th | 5   | — | 1    | 2   | — | 12.5 | 3.5  | —   | 1.5 | 2.0  | 0.5 | 5.0 | 2.5  | 5.0 | 4.5 | 9.0  | 30.0 |
| 5.0 | 1.54 | 0.48 | 12th | 4   | — | —    | 1   | — | 10.5 | 8.5  | —   | 3.5 | 4.5  | 6.0 | 6.0 | 3.0  | 2.0 | 0.5 | 5.5  | —    |
| 3.3 | 1.25 | 0.62 | —    | 4.3 | — | 0.08 | 0.9 | — | 16.5 | 3.6  | 0.3 | 2.0 | 4.8  | 1.7 | 5.7 | 1.04 | 2.8 | 2.2 | 10.2 | 2.5  |

## Appendix

## Annual Abstract of Meteorological Observations taken

## SCUTARI CEMETERY.

Lat. 41° 0' N.

| Month.      | Mean Pressure. | Air Temperature. |          |      |           |      |           |          |           | Tension of Vapour. | Relative Humidity. |           |      |
|-------------|----------------|------------------|----------|------|-----------|------|-----------|----------|-----------|--------------------|--------------------|-----------|------|
|             |                | Mean, 9 a.m.     | Means of |      | Abs. Min. |      | Abs. Max. |          | Per Cent. |                    | Minimum.           |           |      |
|             |                |                  | Min.     | Max. | Temp.     | Day. | Temp.     | Day.     |           |                    | Mean.              | Per Cent. | Day. |
|             |                |                  |          |      |           |      |           |          |           |                    |                    |           |      |
| January .   | 30.121         | 35.8             | 31.0     | 43.1 | 18.0      | 2nd  | 60.2      | 31st     | 183       | 82.6               | 61.0               | 3rd       |      |
| February .  | 29.926         | 40.5             | 35.7     | 47.0 | 23.0      | 9th  | 62.2      | 18th     | 221       | 81.5               | 53.4               | 24th      |      |
| March .     | 29.887         | 47.8             | 40.2     | 57.6 | 23.6      | 7th  | 79.6      | 19th     | 259       | 73.8               | 41.0               | 19th      |      |
| April .     | 29.805         | 56.1             | 47.7     | 66.3 | 40.2      | 17th | 81.6      | 4th      | 334       | 68.5               | 43.0               | 27th      |      |
| May .       | 29.958         | 61.7             | 51.3     | 70.9 | 43.0      | 9th  | 80.8      | 20, 21st | 414       | 73.5               | 41.0               | 28th      |      |
| June .      | 29.875         | 69.8             | 58.4     | 79.9 | 48.6      | 8th  | 89.0      | 30th     | 531       | 70.2               | 57.0               | 24, 26    |      |
| July .      | 29.831         | 78.3             | 64.9     | 90.4 | 58.2      | 4th  | 103.2     | 19th     | 594       | 61.3               | 41.6               | 27th      |      |
| August .    | 29.880         | 75.1             | 63.7     | 84.7 | 55.2      | 22nd | 97.2      | 3rd      | 569       | 64.9               | 45.2               | 22nd      |      |
| September . | 30.030         | 71.7             | 60.5     | 81.5 | 54.6      | 24th | 86.8      | 4th      | 489       | 62.2               | 43.2               | 17th      |      |
| October .   | 29.987         | 62.8             | 51.7     | 71.4 | 38.8      | 24th | 83.0      | 8th      | 449       | 76.0               | 63.0               | 23rd      |      |
| November .  | 30.088         | 46.5             | 41.0     | 54.2 | 29.4      | 10th | 69.8      | 3rd      | 274       | 82.3               | 63.0               | 18th      |      |
| December .  | 30.157         | 42.6             | 38.1     | 48.1 | 23.4      | 14th | 60.6      | 2nd      | 232       | 82.9               | 64.2               | 18th      |      |
| Mean        | 29.962         | 57.3             | 48.9     | 66.2 | 38.0      | —    | 79.9      | —        | 379       | 73.5               | 51.5               | —         |      |

## NICOSIA, CYPRUS.

Lat. 35° 10' 50" N.

|                 |       |      |      |      |      |          |      |      |     |       |       |      |
|-----------------|-------|------|------|------|------|----------|------|------|-----|-------|-------|------|
| January . . .   | 28.98 | 54.7 | 42.7 | 62.5 | 32.5 | 10th     | 69.5 | 19th | 381 | 82.00 | 58.84 | 23rd |
| February . . .  | 29.01 | 60.4 | 44.0 | 68.6 | 34.2 | 10th     | 84.2 | 31st | 396 | 71.0  | 34.0  | 29th |
| March . . .     | 28.87 | 67.2 | 50.2 | 78.1 | 41.9 | 19, 21st | 91.0 | 22nd | 544 | 75.0  | 43.0  | 16th |
| April . . .     | †     | 74.3 | 56.3 | 84.3 | 47.0 | 9th      | 93.2 | 7th  | 611 | 83.0  | 71.5  | 2nd  |
| May . . .       |       |      |      |      |      |          |      |      |     |       |       |      |
| June . . .      |       |      |      |      |      |          |      |      |     |       |       |      |
| July . . .      |       |      |      |      |      |          |      |      |     |       |       |      |
| August . . .    |       |      |      |      |      |          |      |      |     |       |       |      |
| September . . . |       |      |      |      |      |          |      |      |     |       |       |      |
| October . . .   |       |      |      |      |      |          |      |      |     |       |       |      |
| November . . .  |       |      |      |      |      |          |      |      |     |       |       |      |
| December . . .  | †     | 50.3 | 36.3 | 60.0 | 20.5 | 23rd     | 66.5 | 6th  | 364 | 88.4  | 64.0  | 15th |
| Mean            | 17.37 | 61.4 | 45.9 | 70.7 | 35.2 | —        | 80.9 | —    | 469 | 79.9  | 54.58 | —    |

\* 21 days only.

† Aneroid in use.

## POLYMEDIA, CYPRUS.

Lat. 34° 40' N.

|                 |        |      |      |      |      |            |       |          |     |      |      |        |
|-----------------|--------|------|------|------|------|------------|-------|----------|-----|------|------|--------|
| January . . .   | 29.802 | 52.3 | 38.0 | 62.8 | 29.0 | 8, 9th     | 90.0  | 3rd      | 332 | 83.3 | 65.0 | 10, 28 |
| February . . .  | 29.925 | 57.4 | 40.5 | 67.1 | 34.0 | 10th       | 73.0  | 23, 27th | 412 | 86.7 | 59.0 | 9th    |
| March . . .     | 29.954 | 68.7 | 43.4 | 72.0 | 33.0 | 8, 9, 10th | 87.0  | 23rd     | 495 | 64.0 | 60.0 | 18th   |
| April . . .     | 29.858 | 63.2 | 49.6 | 78.0 | 42.0 | 14, 21, 30 | 90.0  | 1st      | 471 | 64.8 | 54.0 | 15th   |
| May . . .       | 29.942 | 75.2 | 48.5 | 84.2 | 44.0 | 1st        | 93.0  | 27, 29th | 572 | 63.4 | 71.0 | 3rd    |
| June . . .      | 29.848 | 80.0 | 51.8 | 89.6 | 49.0 | 5th        | 96.0  | 16, 17th | 632 | 62.2 | 65.0 | 4th    |
| July . . .      |        |      |      |      |      |            |       |          |     |      |      |        |
| August . . .    |        |      |      |      |      |            |       |          |     |      |      |        |
| September . . . |        |      |      |      |      |            |       |          |     |      |      |        |
| October . . .   | 30.014 | 81.3 | 62.4 | 89.0 | 51.1 | 23rd       | 101.0 | 5th      | 694 | 62.3 | 40.8 | 13th   |
| November . . .  | 30.054 | 64.8 | 49.6 | 72.2 | 41.0 | 14, 17, 25 | 84.5  | 2nd      | 421 | 68.0 | 45.7 | 2nd    |
| December . . .  | 30.040 | 57.3 | 44.6 | 64.6 | 32.0 | 14th       | 71.0  | 4th      | 363 | 77.8 | 59.7 | 14th   |
| Mean            | 29.937 | 67.2 | 47.6 | 75.5 | 39.4 | —          | 87.3  | —        | 487 | 70.3 | 57.8 | —      |

\* 17 days only.

## No. IX.—continued.

at Netley and Foreign Stations in the year 1888.

Long. 29° 3' E. Height of Barometer Cistern above Sea, 60 feet.

| Mean Amount of Cloudiness. | Rainfall. |      |      | Weather.          |       |       |                |      |            |           |        |     | Wind.                                             |     |      |     |      |     |      |       |  |  |
|----------------------------|-----------|------|------|-------------------|-------|-------|----------------|------|------------|-----------|--------|-----|---------------------------------------------------|-----|------|-----|------|-----|------|-------|--|--|
|                            | Total.    | Max. | Day. | Number of Days of |       |       |                |      |            |           |        |     | Means of Observations under each Point per Month. |     |      |     |      |     |      |       |  |  |
|                            |           |      |      | Rain.             | Snow. | Hail. | Thunder Storm. | Fog. | Clear Sky. | Overcast. | Gales. | N.  | N.E.                                              | E.  | S.E. | S.  | S.W. | W.  | N.W. | Calm. |  |  |
| 7.0                        | 3.07      | 0.75 | 16th | 9                 | 10    | —     | —              | —    | 6.0        | 19.5      | —      | 9.5 | 5.5                                               | 3.5 | 1.5  | 2.5 | 4.0  | 1.5 | 0.5  | 2.5   |  |  |
| 8.0                        | 6.25      | 1.20 | 10th | 20                | 10    | 1     | 1              | —    | 3.0        | 22.0      | —      | 7.0 | 6.5                                               | 3.5 | 2.0  | 3.0 | 3.5  | 0.5 | —    | 3.0   |  |  |
| 6.0                        | 1.81      | 0.83 | 3rd  | 10                | 3     | —     | —              | 3    | 9.0        | 13.0      | —      | 3.0 | 2.5                                               | 2.5 | 2.0  | 8.5 | 3.5  | 2.5 | —    | 6.5   |  |  |
| 6.0                        | 2.70      | 0.62 | 9th  | 18                | —     | 8     | 3              | —    | 7.0        | 14.0      | —      | 7.0 | 1.5                                               | 0.5 | —    | 8.5 | 3.5  | 3.0 | —    | 6.0   |  |  |
| 5.0                        | 2.46      | 1.09 | 4th  | 11                | —     | —     | —              | 4    | 10.5       | 13.0      | —      | 3.5 | 16.5                                              | 3.5 | —    | 2.5 | 0.5  | 0.5 | 0.5  | 3.5   |  |  |
| 4.0                        | 2.10      | 1.26 | 1st  | 6                 | —     | —     | —              | 2    | 15.5       | 7.0       | —      | 6.0 | 10.0                                              | —   | —    | 4.0 | 6.0  | 0.5 | 1.5  | 2.0   |  |  |
| 2.0                        | 1.63      | 1.07 | 3rd  | 3                 | —     | —     | —              | 1    | 25.0       | 1.0       | —      | 4.5 | 7.5                                               | 2.5 | —    | 3.0 | 4.0  | 2.0 | —    | 7.5   |  |  |
| 3.0                        | 4.59      | 1.85 | 25th | 6                 | —     | —     | 4              | 1    | 19.0       | 5.0       | —      | 8.0 | 11.0                                              | 5.0 | —    | 1.5 | 1.5  | 0.5 | 0.5  | 3.0   |  |  |
| 5.0                        | 0.22      | 0.07 | 19th | 6                 | —     | —     | —              | 1    | 8.0        | 7.0       | —      | 1.5 | 17.0                                              | 7.5 | 0.5  | —   | —    | —   | —    | 3.5   |  |  |
| 4.0                        | 3.27      | 0.78 | 12th | 13                | —     | 1     | 3              | 1    | 14.5       | 8.5       | —      | 7.0 | 4.5                                               | 4.0 | —    | 4.0 | 3.5  | 1.0 | —    | 7.0   |  |  |
| 5.0                        | 5.38      | 1.35 | 11th | 13                | 7     | 2     | 1              | 3    | 10.5       | 12.0      | —      | 8.5 | 4.5                                               | 3.0 | 1.0  | 2.5 | 6.0  | 2.0 | —    | 2.5   |  |  |
| 7.0                        | 4.73      | 1.65 | 7th  | 20                | 5     | 7     | —              | —    | 5.0        | 22.5      | —      | 9.5 | 5.0                                               | 3.0 | —    | 3.0 | 4.5  | 1.0 | 0.5  | 4.5   |  |  |
| 5.2                        | 3.18      | 1.03 | —    | 11.1              | 2.9   | 2.2   | 1.5            | 1.3  | 11.0       | 12.0      | —      | 6.3 | 7.7                                               | 3.2 | 0.6  | 3.6 | 3.4  | 1.3 | 0.3  | 4.3   |  |  |

Long. 33° 21' 15" E. Height of Barometer Cistern above Sea, 592 feet.

|     |      |      |      |      |   |     |     |     |      |      |   |     |     |      |     |     |     |      |      |   |
|-----|------|------|------|------|---|-----|-----|-----|------|------|---|-----|-----|------|-----|-----|-----|------|------|---|
| 5.0 | 0.52 | 0.30 | 28th | 10.0 | — | —   | 2.0 | 1.0 | 10.0 | 7.0  | — | 1.0 | 4.0 | 4.0  | 2.0 | 1.0 | 1.0 | 7.0  | 1.0  | — |
| 5.0 | 1.08 | 0.64 | 1st  | 8.0  | — | 2.0 | 3.0 | 2.0 | 14.0 | 12.0 | — | —   | 4.0 | 7.0  | 5.0 | 2.0 | 2.0 | 9.0  | 2.0  | — |
| 5.0 | 1.67 | 0.98 | 20th | 6.0  | — | 1.0 | 4.0 | —   | 15.0 | 12.0 | — | —   | 2.5 | 2.0  | 3.0 | 3.0 | 1.5 | 12.0 | 6.0  | — |
| 3.0 | 1.23 | 1.0  | 3rd  | 5.0  | — | —   | —   | —   | 21.0 | 2.0  | — | 7.0 | 3.0 | 6.0  | 6.0 | 5.0 | 3.0 | 22.0 | 10.0 | — |
| 6.0 | 3.75 | 1.41 | 10th | 1.0  | — | —   | 2.0 | 1.0 | 15.0 | 5.0  | — | 8.0 | 9.0 | 11.0 | 5.0 | —   | 2.0 | 14.0 | 5.0  | — |
| 4.8 | 1.65 | 0.86 | —    | 6.0  | — | 0.6 | 2.2 | 0.8 | 15.0 | 7.6  | — | 3.2 | 4.5 | 6.0  | 4.2 | 2.2 | 1.9 | 12.8 | 4.8  | — |

Long. 32° 2' E. Height of Barometer Cistern above Sea, 460 feet.

|     |      |      |      |      |   |     |     |   |      |     |   |      |     |     |     |     |     |      |     |   |
|-----|------|------|------|------|---|-----|-----|---|------|-----|---|------|-----|-----|-----|-----|-----|------|-----|---|
| 4.0 | 4.99 | 0.90 | 25th | 18.0 | — | —   | 4.0 | — | 8.0  | 4.0 | — | 11.0 | 2.0 | 1.0 | —   | —   | —   | 11.0 | 6.0 | — |
| 5.0 | 4.36 | 1.13 | 11th | 11.0 | — | 3.0 | 5.0 | — | 5.0  | 4.0 | — | 5.0  | 1.0 | 0.5 | —   | 0.5 | —   | 19.0 | 3.0 | — |
| 5.0 | 1.95 | 0.69 | 18th | 7.0  | — | 1.0 | 3.0 | — | 6.0  | 5.0 | — | —    | —   | 2.0 | 0.5 | 8.0 | —   | 17.0 | 0.5 | — |
| 5.0 | 3.40 | 1.75 | 30th | 7.0  | — | 2.0 | 2.0 | — | 5.5  | 4.5 | — | 2.0  | 0.5 | 2.0 | —   | 5.5 | 2.5 | 17.0 | 0.5 | — |
| 4.0 | 0.75 | 0.41 | 3rd  | 4.0  | — | —   | —   | — | 11.5 | 1.0 | — | 3.0  | 0.5 | 3.5 | 1.5 | 6.5 | 0.5 | 15.0 | 0.5 | — |
| 5.0 | 4.40 | 1.52 | 4th  | 5.0  | — | —   | —   | — | 4.0  | 3.5 | — | 1.5  | 0.5 | 4.0 | —   | 0.5 | —   | 10.0 | 0.5 | — |
| 4.0 | 0.29 | 0.23 | 18th | 2.0  | — | —   | 1.0 | — | 9.5  | 1.5 | — | 12.0 | 0.5 | 1.0 | —   | 2.0 | 1.5 | 12.0 | —   | — |
| 5.0 | 3.65 | 1.79 | 11th | 6.0  | — | —   | 5.0 | — | 9.5  | 2.5 | — | 12.5 | 1.5 | —   | —   | 0.5 | 1.5 | 13.5 | 0.5 | — |
| 5.0 | 4.45 | 1.48 | 6th  | 8.0  | — | —   | 2.0 | — | 3.5  | 3.0 | — | 15.5 | 1.5 | —   | —   | —   | —   | 12.0 | 2.0 | — |
| 4.7 | 3.15 | 1.10 | —    | 7.5  | — | 0.0 | 2.3 | — | 6.7  | 3.2 | — | 8.1  | 0.9 | 1.6 | 0.2 | 2.6 | 0.7 | 14.1 | 1.5 | — |



## Annual Abstract of Meteorological Observations taken

MOUNT TROODOS, CYPRUS.

Lat. 30° 55' N.

| Month.               | Mean Pressure.     | Air Temperature. |          |      |           |      |           |      |           | Tension of Vapour. | Relative Humidity. |      |  |
|----------------------|--------------------|------------------|----------|------|-----------|------|-----------|------|-----------|--------------------|--------------------|------|--|
|                      |                    | Mean, 9 a.m.     | Means of |      | Abs. Min. |      | Abs. Max. |      | Per Cent. |                    | Min.               |      |  |
|                      |                    |                  | Min.     | Max. | Temp.     | Day. | Temp.     | Day. | Mean.     |                    | Per Cent.          | Day. |  |
|                      |                    |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| January . . . . .    | Anemoid<br>in use. |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| February . . . . .   |                    |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| March . . . . .      |                    |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| April . . . . .      |                    |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| May . . . . .        |                    |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| June* . . . . .      |                    | 68°0             | 52°9     | 72°8 | 49°5      | 19th | 86°0      | 30th | °465      | 66°4               | 43°0               | 25th |  |
| July . . . . .       |                    | 72°2             | 60°6     | 85°8 | 45°0      | 3rd  | 101°0     | 19th | °491      | 83°5               | 25°0               | 31st |  |
| August . . . . .     |                    | 80°9             | 57°3     | 80°2 | 47°1      | 25th | 98°4      | 7th  | °435      | 56°8               | 32°2               | 23rd |  |
| September† . . . . . |                    | 64°0             | 51°5     | 73°0 | 44°1      | 18th | 82°9      | 2nd  | °317      | 46°4               | 36°0               | 9th  |  |
| October . . . . .    |                    |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| November . . . . .   |                    |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| December . . . . .   |                    |                  |          |      |           |      |           |      |           |                    |                    |      |  |
| Mean . . . . .       | —                  | 68°5             | 58°1     | 77°9 | 46°4      | —    | 92°1      | —    | °427      | 63°3               | 34°1               | —    |  |

\* For 11 days only.

† For 29 days only.

## FORT NAPIER, NATAL.

Lat. 29° 3' S.

|                     |        |      |      |      |      |          |       |         |      |      |      |      |   |
|---------------------|--------|------|------|------|------|----------|-------|---------|------|------|------|------|---|
| January . . . . .   | 29°851 | 71°8 | 59°3 | 82°2 | 51°2 | 26th     | 100°4 | 2nd     | °520 | 62°0 | 29°0 | 8th  |   |
| February . . . . .  | 29°839 | 73°3 | 60°7 | 84°5 | 50°0 | 1st      | 95°0  | 5, 14th | °596 | 69°0 | 30°0 | 5th  |   |
| March . . . . .     | 29°906 | 68°4 | 57°5 | 79°1 | 42°0 | 5th      | 96°0  | 6th     | °512 | 71°0 | 40°0 | 6th  |   |
| April . . . . .     | 29°887 | 68°4 | 56°3 | 79°2 | 50°5 | 24, 25th | 93°5  | 5th     | °495 | 67°0 | 35°0 | 1st  |   |
| May . . . . .       | 29°831 | 60°7 | 48°5 | 76°3 | 38°5 | 26th     | 86°0  | 12th    | °343 | 64°0 | 30°0 | 15th |   |
| June . . . . .      | 29°870 | 59°5 | 44°9 | 75°9 | 36°0 | 16th     | 93°0  | 29th    | °333 | 63°0 | 27°0 | 29th |   |
| July . . . . .      | 30°055 | 57°2 | 43°4 | 73°1 | 34°6 | 29th     | 85°0  | 9th     | °317 | 64°4 | 29°6 | 4th  |   |
| August . . . . .    | 29°950 | 61°8 | 51°3 | 77°8 | 39°0 | 22nd     | 92°2  | 9th     | °365 | 59°0 | 29°0 | 26th |   |
| September . . . . . | 29°964 | 64°1 | 51°2 | 73°9 | 39°5 | 3rd      | 86°2  | 22nd    | °375 | 60°6 | 31°8 | 4th  |   |
| October . . . . .   | 29°917 | 70°2 | 57°1 | 80°0 | 45°0 | 31st     | 96°4  | 5th     | °471 | 61°0 | 28°6 | 24th |   |
| November . . . . .  | 29°811 | 70°5 | 55°9 | 80°1 | 38°0 | 1st      | 95°0  | 2nd     | °476 | 61°0 | 28°6 | 21st |   |
| December . . . . .  | 29°846 | 73°3 | 60°6 | 81°5 | 52°0 | 16th     | 106°0 | 11th    | °508 | 52°5 | 29°0 | 11th |   |
| Mean . . . . .      | 29°904 | 66°8 | 53°9 | 78°6 | 43°0 | —        | 93°6  | —       | °443 | 63°5 | 30°5 | —    | — |

## SIERRA LEONE.

Lat. 8° 29' 30" N.

|                     |        |      |      |       |      |      |       |            |      |      |      |      |   |
|---------------------|--------|------|------|-------|------|------|-------|------------|------|------|------|------|---|
| January . . . . .   | 29°919 | 79°2 | 70°2 | 100°4 | 70°2 | 4th  | 100°5 | 1st        | °861 | 75°7 | 56°2 | 28th |   |
| February . . . . .  | 29°878 | 82°4 | 70°4 | 100°4 | 70°0 | 2nd  | 100°5 | 1-5, 10-22 | °803 | 58°5 | 56°6 | 2nd  |   |
| March . . . . .     | 29°919 | 79°1 | 70°2 | 100°4 | 70°1 | 13th | 100°5 | 1st        | °861 | 91°0 | 57°5 | 1st  |   |
| April . . . . .     | 29°911 | 79°8 | 70°2 | 100°4 | 70°2 | 1st  | 100°5 | 5th        | °918 | 90°5 | 57°8 | 8th  |   |
| May . . . . .       | 29°882 | 78°8 | 70°7 | 100°4 | 70°2 | 1st  | 100°5 | 1st        | °879 | 88°1 | 63°2 | 2nd  |   |
| June . . . . .      | 29°862 | 76°7 | 70°3 | 100°4 | 70°1 | 25th | 100°5 | 1st        | °738 | 69°8 | 63°2 | 2nd  |   |
| July . . . . .      | 29°923 | 85°4 | 70°2 | 100°3 | 70°1 | 9th  | 100°5 | 1st        | °723 | 89°0 | 57°5 | 3rd  |   |
| August . . . . .    | 29°925 | 73°6 | 70°3 | 100°1 | 70°2 | 12th | 100°3 | 28th       | °717 | 94°5 | 57°8 | 1st  |   |
| September . . . . . | 29°918 | 77°3 | 70°2 | 100°4 | 70°0 | 29th | 100°5 | 18th       | °744 | 79°1 | 58°1 | 2nd  |   |
| October . . . . .   | 29°917 | 78°4 | 70°0 | 100°6 | 70°0 | 1st  | 100°9 | 23rd       | °805 | 75°0 | 56°4 | 4th  |   |
| November . . . . .  | 29°890 | 80°3 | 64°5 | 81°5  | 60°3 | 9th  | 90°5  | 21st       | °866 | 85°0 | 62°6 | 19th |   |
| December . . . . .  | 29°911 | 79°1 | 69°5 | 83°2  | 60°6 | 6th  | 87°7  | 15th       | °750 | 67°5 | 32°0 | 27th |   |
| Mean . . . . .      | 29°905 | 79°2 | 69°7 | 97°4  | 63°5 | —    | 98°0  | —          | °805 | 80°3 | 56°5 | —    | — |

## No. IX.—continued.

at Netley and Foreign Stations in the Year 1888.

Long. 32° 53' E. Height of Barometer Cistern above Sea, 5,720 feet.

| Mean Amount of Cloudiness. | Rainfall. |      |      | Weather.          |       |       |                |      |            |           |        |      | Wind.                                             |     |      |     |      |     |      |       |   |  |
|----------------------------|-----------|------|------|-------------------|-------|-------|----------------|------|------------|-----------|--------|------|---------------------------------------------------|-----|------|-----|------|-----|------|-------|---|--|
|                            | Total.    | Max. | Day. | Number of Days of |       |       |                |      |            |           |        |      | Means of Observations under each Point per Month. |     |      |     |      |     |      |       |   |  |
|                            |           |      |      | Rain.             | Snow. | Hail. | Thunder Storm. | Fog. | Clear Sky. | Overcast. | Gales. | N.   | N.E.                                              | E.  | S.E. | S.  | S.W. | W.  | N.W. | Calm. |   |  |
|                            |           |      |      |                   |       |       |                |      |            |           |        |      |                                                   |     |      |     |      |     |      |       |   |  |
| 3.5                        | —         | —    | —    | —                 | —     | —     | —              | —    | 6.0        | 1.0       | —      | 3.0  | —                                                 | —   | —    | 1.0 | —    | —   | 7.0  | —     | — |  |
| 2.5                        | —         | —    | —    | —                 | —     | —     | —              | 1.   | 20.0       | 1.0       | —      | 14.0 | 1.0                                               | 1.0 | 1.0  | 3.0 | —    | —   | 49.0 | 2.0   | — |  |
| 2.0                        | —         | —    | —    | —                 | —     | —     | —              | —    | 24.0       | —         | —      | 17.0 | 1.0                                               | 1.0 | 1.0  | 1.0 | —    | —   | 10.0 | 1.0   | — |  |
| 3.0                        | 0.39      | 0.33 | 23rd | 2.                | —     | 1.    | 2.             | —    | 15.0       | 2.0       | —      | 15.0 | 1.0                                               | 1.0 | 1.0  | 5.0 | 1.0  | —   | 5.0  | —     | — |  |
| 2.7                        | 0.10      | 0.8  | —    | .5                | —     | .2    | .5             | .2   | 18.5       | 1.0       | —      | 12.2 | 0.7                                               | 0.7 | 0.5  | 2.5 | 0.2  | 7.7 | 0.7  | —     | — |  |

Long. 30° 2' E. Height of Barometer Cistern above Sea, 2,220 feet.

|     |       |      |      |      |   |   |     |     |      |      |     |     |     |      |     |     |     |     |     |      |
|-----|-------|------|------|------|---|---|-----|-----|------|------|-----|-----|-----|------|-----|-----|-----|-----|-----|------|
| 5.8 | 6.28  | 0.96 | 31st | 16.0 | — | — | 4   | 1   | 12.0 | 14.5 | 1   | 0.5 | 4.0 | 10.0 | 2.0 | 4.0 | —   | 0.5 | 0.5 | 9.5  |
| 5.0 | 12.31 | 5.15 | 8th  | 11.0 | — | — | 4   | 3   | 12.5 | 11.0 | 1   | 1.5 | 1.6 | 8.0  | 4.5 | 2.0 | 1.5 | —   | —   | 10.0 |
| 6.0 | 6.62  | 1.83 | 24th | 18.0 | — | — | 6   | 5   | 10.5 | 14.5 | 4   | 2.5 | 2.5 | 7.5  | 3.5 | 2.5 | 0.5 | —   | 0.5 | 11.5 |
| 4.2 | 2.71  | 1.64 | 6th  | 9.0  | — | — | 1   | 2   | 17.5 | 10.0 | 1   | 2.5 | 1.0 | 6.0  | 1.5 | 1.0 | 1.0 | 0.5 | 2.5 | 14.0 |
| 2.8 | 1.41  | 0.55 | 8th  | 8.0  | — | — | 2   | 2   | 21.0 | 5.5  | 1   | 3.0 | 2.5 | 2.5  | 1.0 | 6.0 | 1.0 | —   | 1.5 | 3.5  |
| 0.8 | 0.83  | 0.75 | 14th | 2.0  | — | — | 1   | —   | 24.0 | 1.5  | —   | 1.0 | 2.5 | 11.5 | 2.5 | 1.5 | 1.0 | 0.5 | 3.0 | 6.5  |
| 3.2 | 0.28  | 0.27 | 17th | 2.0  | — | — | 1   | —   | 19.5 | 7.0  | 1   | —   | 3.5 | 14.5 | 1.0 | 3.5 | 1.5 | 1.5 | 2.5 | 3.0  |
| 4.0 | 1.34  | 0.75 | 30th | 6.0  | — | — | 3   | —   | 17.0 | 6.0  | 3   | 0.5 | 1.5 | 15.5 | 2.0 | 1.0 | 0.5 | 0.5 | 7.0 | 2.5  |
| 5.6 | 3.44  | 2.70 | 28th | 6.0  | — | — | 2   | 1   | 10.0 | 15.0 | 2   | 0.5 | 4.0 | 16.5 | 0.5 | 4.0 | 3.0 | 0.5 | 0.5 | 0.5  |
| 5.8 | 5.49  | 0.94 | 27th | 13.0 | — | — | 8   | 1   | 11.5 | 15.5 | —   | 2.5 | 6.0 | 14.0 | 4.0 | 3.5 | 0.5 | —   | —   | 0.5  |
| 7.0 | 2.91  | 0.95 | 11th | 10.0 | — | — | 7   | —   | 7.5  | 18.0 | 1   | 1.0 | 3.5 | 15.0 | 6.0 | 1.5 | 1.0 | 1.5 | 0.5 | —    |
| 5.3 | 2.30  | 1.0  | 20th | 8.0  | — | — | 7   | —   | 10.0 | 13.0 | 1   | 2.0 | 9.5 | 9.5  | 3.0 | 4.5 | 2.0 | 0.5 | —   | —    |
| 4.6 | 3.87  | 1.46 | —    | 9.0  | — | — | 3.7 | 1.2 | 14.8 | 10.9 | 1.3 | 1.5 | 3.5 | 10.9 | 2.6 | 2.9 | 1.1 | 0.5 | 1.6 | 5.1  |

Long. 13° 9' 17" W. Height of Barometer Cistern above Sea, 224 feet.

|     |       |      |      |      |   |   |     |   |      |      |   |      |     |     |      |      |     |     |     |   |
|-----|-------|------|------|------|---|---|-----|---|------|------|---|------|-----|-----|------|------|-----|-----|-----|---|
| 9.0 | 1.93  | 0.74 | 22nd | 4    | — | — | 3   | — | 31.0 | —    | — | 4.0  | —   | 8.0 | —    | 10.0 | —   | 9.0 | —   | — |
| 9.6 | 0.26  | 0.18 | 10th | 2    | — | — | 1   | — | —    | 24.0 | — | 3.0  | 6.0 | 4.0 | 1.0  | 5.5  | 2.0 | 7.0 | 0.5 | — |
| 2.3 | 0.98  | 0.66 | 22nd | 3    | — | — | —   | — | 23.0 | —    | — | 6.0  | 2.0 | 7.5 | 1.0  | 8.5  | —   | 6.0 | —   | — |
| 1.5 | 3.33  | 0.53 | 17th | 12   | — | — | 8   | — | 28.0 | —    | — | 6.0  | 1.0 | 8.0 | —    | 9.0  | —   | 6.0 | —   | — |
| 2.8 | 7.96  | 1.50 | 31st | 13   | — | — | 8   | — | 25.0 | —    | — | 8.0  | 4.0 | 1.0 | 10.0 | 1.0  | 7.0 | —   | —   | — |
| 2.5 | 18.59 | 4.30 | 25th | 18   | — | — | 10  | — | 23.5 | —    | — | 7.0  | 0.5 | 6.5 | 0.5  | 9.0  | 1.5 | 5.0 | —   | — |
| 3.8 | 35.96 | 3.50 | 28th | 28   | — | — | 3   | — | 5.0  | 1.0  | — | 12.0 | 0.5 | 1.5 | —    | 15.5 | —   | 1.5 | —   | — |
| 4.1 | 34.88 | 4.30 | 17th | 24   | — | — | 8   | — | 6.5  | —    | — | 11.5 | —   | 1.5 | —    | 15.0 | —   | 3.0 | —   | — |
| 2.9 | 37.11 | 6.20 | 1st  | 23   | — | — | 9   | — | 22.5 | —    | — | 13.5 | —   | —   | —    | 12.5 | —   | 4.0 | —   | — |
| 3.4 | 19.17 | 3.70 | 27th | 19   | — | — | 11  | — | 13.5 | 17.5 | — | 13.0 | 1.5 | 0.5 | —    | 11.5 | —   | 4.5 | —   | — |
| 2.3 | 3.35  | 2.50 | 19th | 4    | — | — | 5   | — | 28.0 | —    | — | 8.5  | 3.5 | —   | —    | 10.5 | 1.0 | 6.5 | —   | — |
| 2.4 | 1.40  | 0.87 | 18th | 2    | — | — | 1   | — | 24.5 | —    | — | 7.5  | 3.5 | —   | 2.0  | 11.5 | —   | 6.5 | —   | — |
| 3.9 | 13.79 | 2.42 | —    | 12.7 | — | — | 6.3 | — | 19.2 | 3.5  | — | 8.3  | 1.9 | 3.2 | 1.2  | 9.9  | 1.0 | 4.9 | 0.4 | — |

## Appendix

## Annual Abstract of Meteorological Observations taken

## BARBADOS.

Lat. 13° 7' N.

| Month.      | Mean Pressure. | Air Temperature. |          |      |           |            |           |              |           | Tension of Vapour. | Relative Humidity. |           |      |
|-------------|----------------|------------------|----------|------|-----------|------------|-----------|--------------|-----------|--------------------|--------------------|-----------|------|
|             |                | Mean, 9 a.m.     | Means of |      | Abs. Min. |            | Abs. Max. |              | Per Cent. |                    | Min.               |           |      |
|             |                |                  | Min.     | Max. | Temp.     | Day.       | Temp.     | Day.         |           |                    | Mean.              | Per Cent. | Day. |
| January -   | 30°048         | 79°1             | 71°0     | 81°8 | 68°0      | 19th       | 86°0      | 6th          | 704       | 70°6               | 52°4               | 20th      |      |
| February -  | 30°009         | 79°1             | 69°6     | 79°8 | 67°0      | 21, 25th   | 84°0      | 11th         | 686       | 69°4               | 51°4               | 28th      |      |
| March -     | 30°031         | 81°1             | 71°5     | 81°7 | 69°0      | 1st, 3rd   | 85°0      | 13, 28th     | 708       | 65°6               | 50°4               | 16th      |      |
| April -     | 30°006         | 82°5             | 72°5     | 83°4 | 66°0      | 11th       | 86°0      | 21st         | 753       | 67°9               | 54°0               | 9th       |      |
| May -       | 29°995         | 82°7             | 74°1     | 83°4 | 72°0      | 12th       | 88°0      | 10, 28th     | 797       | 70°8               | 56°4               | 21st      |      |
| June -      | 30°032         | 76°7             | 74°4     | 85°4 | 71°0      | 24th       | 91°0      | 16th         | 793       | 68°0               | 46°4               | 16th      |      |
| July -      | 30°049         | 82°6             | 74°6     | 84°2 | 72°0      | 3, 20, 21  | 89°0      | 12th         | 829       | 74°8               | 60°4               | 7th       |      |
| August -    | 29°995         | 83°0             | 73°6     | 84°0 | 71°0      | 15, 19, 30 | 88°0      | 2, 6, 27, 30 | 840       | 75°2               | 54°4               | 6th       |      |
| September - | 29°967         | 83°9             | 74°1     | 85°8 | 69°0      | 13th       | 89°0      | 6, 27th      | 871       | 74°0               | 60°4               | 27th      |      |
| October -   | 29°962         | 84°2             | 73°6     | 85°8 | 70°0      | 31st       | 89°0      | 18th         | 821       | 70°0               | 57°4               | 26th      |      |
| November -  | 29°947         | 83°3             | 73°4     | 84°6 | 70°0      | 17, 18th   | 87°0      | 5, 27, 29    | 833       | 74°0               | 60°4               | 23th      |      |
| December -  | 30°016         | 82°6             | 73°6     | 84°6 | 70°0      | 19th       | 87°0      | 22 to 27     | 755       | 68°0               | 56°4               | 8th       |      |
| Mean        | 30°005         | 81°7             | 73°0     | 83°7 | 69°6      | —          | 87°0      | —            | 783       | 70°7               | 55°0               | —         |      |

## NEWCASTLE, JAMAICA.

Lat. 15° 6' N.

| Month.      | Mean Pressure. | Mean, 9 a.m. | Means of | Abs. Min. | Abs. Max. | Tension of Vapour. | Relative Humidity. |
|-------------|----------------|--------------|----------|-----------|-----------|--------------------|--------------------|
| January -   | 30°092         | 53°4         | 77°8     | 51°4      | 20th      | 82°0               | 2nd                |
| February -  | 29°982         | 53°4         | 78°2     | 51°4      | —         | 84°0               | 9th                |
| March -     | 29°970         | 53°4         | 79°7     | 51°4      | —         | 85°0               | 16th               |
| April -     | 29°953         | 53°4         | 81°3     | 51°4      | —         | 86°4               | 14th               |
| May -       | 29°908         | 53°4         | 78°7     | 51°4      | —         | 86°0               | 21st               |
| June -      | 29°943         | 53°4         | 82°7     | 51°4      | —         | 88°2               | 22nd               |
| July -      | 29°978         | 59°4         | 80°0     | 55°4      | 9th       | 84°0               | 19th               |
| August -    | 29°953         | 57°8         | 81°3     | 54°0      | 27th      | 83°4               | 7th                |
| September - | 29°947         | 56°3         | 79°6     | 54°0      | 22nd      | 82°6               | 16th               |
| October -   | 29°956         | 56°0         | 80°4     | 52°2      | 26th      | 85°2               | 1st                |
| November -  | 29°958         | 53°8         | 79°6     | 49°0      | 26th      | 85°0               | 1st                |
| December -  | 30°034         | 54°0         | 78°0     | 50°0      | 22nd      | 85°0               | 5th                |
| Mean -      | 29°968         | —            | 55°8     | 79°8      | 52°3      | 84°7               | —                  |

## UP. PARK CAMP, JAMAICA.

Lat. 17° 54' N.

| Month.      | Mean Pressure. | Mean, 9 a.m. | Means of | Abs. Min. | Abs. Max. | Tension of Vapour. | Relative Humidity. |
|-------------|----------------|--------------|----------|-----------|-----------|--------------------|--------------------|
| January -   | 29°926         | 82°6         | 62°0     | 81°7      | 59°3      | 6th                | 85°3               |
| February -  | 29°930         | 82°4         | 61°5     | 81°8      | 58°5      | 28th               | 83°3               |
| March -     | 30°044         | 84°0         | 62°2     | 82°0      | 59°7      | 6th                | 86°0               |
| April -     | 30°061         | 82°2         | 62°2     | 83°6      | 60°0      | 12th               | 88°0               |
| May -       | 29°982         | 82°3         | 66°1     | 81°8      | 61°0      | 5nd                | 87°0               |
| June -      | 29°991         | 84°9         | 67°6     | 85°1      | 64°2      | 16th               | 88°0               |
| July -      | 30°008         | 87°4         | 67°7     | 87°2      | 64°0      | 7th                | 92°2               |
| August -    | 29°981         | 87°0         | 67°9     | 86°5      | 65°0      | 9th                | 91°7               |
| September - | 29°959         | 86°0         | 68°0     | 85°3      | 62°0      | 2nd                | 89°0               |
| October -   | 30°058         | 86°4         | 67°3     | 84°8      | 62°0      | 16th               | 89°0               |
| November -  | 29°983         | 86°4         | 68°4     | 84°9      | 63°2      | 8th                | 89°0               |
| December -  | 30°052         | 82°5         | 66°7     | 80°0      | 61°2      | 22nd               | 94°0               |
| Mean -      | 29°962         | 84°5         | 65°5     | 84°5      | 61°7      | —                  | 88°5               |

No. IX.—*continued.*

at Netley and Foreign Stations in the Year 1888.

Long. 59° 40' W. Height of Barometer Cistern above Sea, 30·7 feet.

| Mean Amount of Cloudiness. | Rainfall. |      |      | Weather.          |       |       |                |      |            |           |        |    | Wind.                                             |      |      |     |      |    |      |       |      |   |
|----------------------------|-----------|------|------|-------------------|-------|-------|----------------|------|------------|-----------|--------|----|---------------------------------------------------|------|------|-----|------|----|------|-------|------|---|
|                            | Total.    | Max. | Day. | Number of Days of |       |       |                |      |            |           |        |    | Means of Observations under each Point per Month. |      |      |     |      |    |      |       |      |   |
|                            |           |      |      | Rain.             | Snow. | Hail. | Thunder Storm. | Fog. | Clear Sky. | Overcast. | Gales. | N. | N.E.                                              | E.   | S.E. | S.  | S.W. | W. | N.W. | Calm. |      |   |
| 5·1                        | 4·77      | 2·10 | 3rd  | 17                | —     | —     | —              | —    | —          | 5·5       | 4·0    | —  | —                                                 | 29·5 | 1·5  | —   | —    | —  | —    | —     | —    | — |
| 4·7                        | 1·82      | 0·70 | 14th | 12                | —     | —     | —              | —    | —          | 7·0       | 3·0    | —  | —                                                 | 19·5 | 8·5  | 1·0 | —    | —  | —    | —     | —    |   |
| 5·6                        | 1·83      | 0·45 | 18th | 12                | —     | —     | —              | —    | —          | 3·0       | 5·5    | —  | —                                                 | 26·5 | 3·0  | 1·5 | —    | —  | —    | —     | —    |   |
| 5·0                        | 2·65      | 0·65 | 26th | 12                | —     | —     | —              | —    | —          | 4·0       | 3·0    | —  | —                                                 | 20·5 | 8·5  | 1·0 | —    | —  | —    | —     | —    |   |
| 5·5                        | 5·27      | 1·50 | 11th | 17                | —     | —     | —              | —    | —          | 17·0      | 3·5    | —  | 0·5                                               | 18·0 | 10·0 | 2·5 | —    | —  | —    | —     | —    |   |
| 4·8                        | 5·40      | 1·50 | 24th | 14                | —     | —     | —              | —    | —          | 7·0       | 3·0    | —  | 0·5                                               | 8·5  | 19·5 | 1·0 | —    | —  | —    | —     | 0·5  |   |
| 4·8                        | 9·63      | 2·40 | 26th | 23                | —     | —     | —              | —    | —          | 8·0       | 4·0    | —  | —                                                 | 13·0 | 17·5 | —   | —    | —  | —    | —     | 0·5  |   |
| 5·2                        | 15·74     | 2·70 | 23rd | 21                | —     | —     | —              | —    | —          | 6·5       | 6·0    | —  | 0·5                                               | 4·0  | 24·5 | 2·0 | —    | —  | —    | —     | —    |   |
| 4·9                        | 7·75      | 2·30 | 28th | 17                | —     | —     | —              | —    | —          | 8·0       | 4·5    | —  | 0·5                                               | 1·5  | 24·5 | 3·5 | —    | —  | —    | —     | —    |   |
| 4·7                        | 3·0       | 0·85 | 31st | 16                | —     | —     | —              | —    | —          | 7·5       | 4·5    | —  | —                                                 | 4·0  | 25·0 | 2·0 | —    | —  | —    | —     | —    |   |
| 4·7                        | 5·86      | 1·22 | 12th | 17                | —     | —     | —              | —    | —          | 10·5      | 4·5    | —  | —                                                 | 3·0  | 24·5 | 2·5 | —    | —  | —    | —     | —    |   |
| 4·7                        | 2·83      | 0·89 | 4th  | 11                | —     | —     | —              | —    | —          | 8·5       | 2·5    | —  | —                                                 | 21·0 | 6·0  | 4·0 | —    | —  | —    | —     | —    |   |
| 4·9                        | 5·55      | 1·44 | —    | 15·7              | —     | —     | —              | —    | —          | 7·7       | 4·0    | —  | 0·2                                               | 14·1 | 14·4 | 1·7 | —    | —  | —    | —     | 0·08 |   |

Long. 76° 42' W. Height of Barometer Cistern above Sea, 3,800 feet.

|     |       |      |      |      |   |   |     |   |      |      |      |     |      |     |     |     |     |     |     |      |
|-----|-------|------|------|------|---|---|-----|---|------|------|------|-----|------|-----|-----|-----|-----|-----|-----|------|
| 3·0 | 0·79  | 0·31 | 29th | 8    | — | — | —   | — | 21·0 | 0·5  | —    | —   | 4·5  | 1·0 | 6·0 | 0·5 | 5·0 | 1·0 | 8·5 | 4·5  |
| 3·5 | 4·52  | 2·10 | 28th | 11   | — | — | —   | — | 15·5 | 3·0  | —    | 2·0 | 7·0  | —   | 5·5 | —   | 4·0 | —   | 6·0 | 4·5  |
| 3·4 | 4·72  | 3·75 | 1st  | 11   | — | — | —   | — | 19·0 | 2·5  | —    | 2·0 | 6·0  | —   | 3·0 | —   | 9·5 | —   | 9·5 | 1·0  |
| 4·0 | 10·41 | 3·85 | 26th | 10   | — | — | 2·0 | — | 15·0 | —    | —    | —   | 10·0 | —   | 5·5 | —   | 2·0 | —   | 7·0 | 5·5  |
| 4·8 | 29·36 | 4·76 | 10th | 23   | — | — | 8·0 | — | 12·0 | 8·5  | —    | —   | 9·5  | —   | 3·5 | —   | 4·5 | —   | 6·0 | 7·5  |
| 3·7 | 5·48  | 2·20 | 29th | 7    | — | — | 2·0 | — | 15·5 | 2·0  | —    | 0·5 | 2·0  | —   | 7·0 | 2·5 | 5·0 | 1·5 | 5·5 | 6·0  |
| 2·9 | 0·58  | 0·32 | 29th | 4    | — | — | —   | — | 23·0 | 1·5  | —    | —   | 1·0  | —   | 3·0 | 5·5 | 8·0 | —   | 5·5 | 8·0  |
| 2·5 | 7·36  | 3·0  | 27th | 8    | — | — | 1·0 | — | 24·5 | 6·5  | —    | —   | 3·5  | —   | 9·5 | —   | 9·5 | —   | —   | 8·5  |
| 4·5 | 9·51  | 2·9  | 21st | 16   | — | — | 2·0 | — | 13·5 | 4·5  | —    | —   | 5·5  | 3·0 | —   | —   | —   | —   | —   | 21·5 |
| 3·5 | 7·34  | 1·35 | 15th | 15   | — | — | 1·0 | — | 21·0 | 4·0  | —    | —   | 6·0  | —   | —   | —   | —   | —   | —   | 25·0 |
| 4·1 | 4·28  | 0·85 | 12th | 13   | — | — | —   | — | 17·5 | 7·5  | —    | 1·5 | 6·5  | 1·5 | 1·5 | —   | 1·5 | 1·5 | 1·5 | 14·5 |
| 5·7 | 22·86 | 11·0 | 23rd | 24   | — | — | —   | — | 8·5  | 12·0 | 10·5 | 5·5 | 3·5  | 3·0 | 0·5 | 0·5 | 0·5 | 6·5 | 5·0 | 6·0  |
| 3·8 | 8·93  | 3·3  | —    | 12·5 | — | — | 2·6 | — | 17·0 | 4·4  | ·88  | 2·3 | 5·4  | 2·1 | 4·5 | 2·2 | 4·9 | 2·6 | 6·1 | 9·4  |

Long. 76° 56' W. Height of Barometer Cistern above Sea, 245 feet.

|     |       |      |      |     |   |   |     |   |      |     |   |     |     |     |      |     |     |     |     |     |
|-----|-------|------|------|-----|---|---|-----|---|------|-----|---|-----|-----|-----|------|-----|-----|-----|-----|-----|
| 2·7 | 0·40  | 0·19 | 20th | 3   | — | — | —   | — | 23·0 | 1·5 | — | —   | 9·5 | —   | 9·0  | 2·5 | 4·0 | —   | 5·5 | 0·5 |
| 3·2 | 0·86  | 0·55 | 3rd  | 2   | — | — | —   | — | 18·0 | —   | — | —   | 8·0 | —   | 9·0  | 2·0 | 4·5 | —   | 5·5 | —   |
| 3·2 | 0·46  | 0·46 | 1st  | 1   | — | — | —   | — | 19·5 | 0·5 | — | —   | 2·5 | —   | 13·0 | 5·0 | 8·0 | —   | 2·5 | —   |
| 3·7 | 0·84  | 0·42 | 24th | 4   | — | — | —   | — | 17·0 | 3·5 | — | 0·5 | 1·0 | 0·5 | 13·5 | 1·0 | 8·5 | 2·0 | 3·0 | —   |
| 5·1 | 22·00 | 3·50 | 10th | 16  | — | — | —   | — | 11·5 | 8·0 | — | 4·5 | 7·5 | 2·5 | 13·5 | 1·5 | 1·0 | —   | 0·5 | —   |
| 2·8 | 3·26  | 1·15 | 8th  | 6   | — | — | 3   | — | 23·0 | 2·0 | — | 2·0 | 6·5 | —   | 12·0 | 2·0 | 1·0 | 2·5 | 4·0 | —   |
| 2·9 | 1·58  | 0·75 | 29th | 4   | — | — | 2   | — | 22·5 | 1·0 | — | —   | 4·5 | 1·0 | 11·5 | 3·0 | 7·0 | 2·0 | 2·0 | —   |
| 3·5 | 3·03  | 1·10 | 25th | 11  | — | — | 1   | — | 2·0  | 3·5 | — | 2·0 | 5·5 | 0·5 | 7·5  | 1·0 | 6·5 | 3·5 | 4·5 | —   |
| 4·1 | 9·45  | 2·50 | 3rd  | 15  | — | — | 7   | — | 15·0 | 6·5 | — | 1·5 | 4·0 | —   | 15·0 | 2·0 | 4·5 | 1·5 | 1·5 | —   |
| 2·8 | 3·35  | 1·10 | 9th  | 11  | — | — | 2   | — | 22·0 | 1·5 | — | 2·0 | 4·5 | —   | 11·0 | 4·5 | 4·0 | 1·0 | 4·0 | —   |
| 2·5 | 1·17  | 1·00 | 30th | 3   | — | — | —   | — | 21·5 | 1·5 | — | 2·0 | 4·5 | 1·0 | 9·5  | 1·5 | 8·0 | 1·5 | 2·0 | —   |
| 3·0 | 1·86  | 1·32 | 10th | 4   | — | — | —   | — | 17·5 | 1·5 | — | 5·0 | 7·0 | 1·0 | 11·5 | 0·5 | 2·0 | 0·5 | 3·5 | —   |
| 3·3 | 4·00  | 1·17 | —    | 6·6 | — | — | 1·2 | — | 17·7 | 2·6 | — | 1·6 | 5·4 | 0·5 | 11·3 | 2·2 | 4·9 | 1·2 | 3·2 | —   |

## Appendix

## Annual Abstract of Meteorological Observations taken

NASSAU.

Lat. 25° 5' N.

| Month.      | Mean Pressure. | Air Temperature. |          |       |           |      |           |      |           | Tension of Vapour. | Relative Humidity. |           |      |
|-------------|----------------|------------------|----------|-------|-----------|------|-----------|------|-----------|--------------------|--------------------|-----------|------|
|             |                | Mean, 9 a.m.     | Means of |       | Abs. Min. |      | Abs. Max. |      | Per Cent. |                    | Min.               |           |      |
|             |                |                  | Min.     | Max.  | Temp.     | Day. | Temp.     | Day. |           |                    | Mean.              | Per Cent. | Day. |
|             |                |                  |          |       |           |      |           |      |           |                    |                    |           |      |
| January -   | 30° 213        | 72° 6            | 66° 1    | 77° 4 | 57° 8     | 30th | 83° 3     | 2nd  | ° 575     | 71° 6              | 49° 9              | 20th      |      |
| February -  | 30° 105        | 73° 0            | 65° 4    | 79° 3 | 60° 0     | 2nd  | 85° 2     | 6th  | ° 581     | 70° 8              | 48° 7              | 29th      |      |
| March -     | 30° 130        | 72° 6            | 64° 3    | 78° 0 | 55° 0     | 17th | 85° 6     | 30th | ° 531     | 64° 2              | 44° 6              | 13th      |      |
| April -     | 30° 131        | 75° 9            | 66° 0    | 81° 2 | 53° 8     | 8th  | 87° 0     | 13th | ° 592     | 64° 0              | 51° 3              | 19th      |      |
| May -       | 30° 008        | 70° 6            | 70° 3    | 84° 5 | 62° 8     | 2nd  | 90° 7     | 26th | ° 724     | 71° 0              | 55° 1              | 1st       |      |
| June -      | 30° 033        | 82° 4            | 73° 1    | 87° 1 | 68° 8     | 23rd | 94° 7     | 17th | ° 795     | 71° 6              | 55° 1              | 8th       |      |
| July -      | 30° 055        | 84° 2            | 71° 7    | 89° 1 | 69° 1     | 19th | 93° 8     | 12th | ° 823     | 71° 2              | 49° 5              | 12th      |      |
| August -    | 30° 047        | 84° 6            | 75° 5    | 89° 2 | 71° 7     | 3rd  | 91° 3     | 23rd | ° 854     | 71° 6              | 63° 6              | 25th      |      |
| September - | 29° 945        | 83° 9            | 75° 9    | 88° 1 | 71° 4     | 20th | 91° 4     | 14th | ° 845     | 72° 8              | 65° 4              | 15th      |      |
| October -   | 30° 063        | 82° 2            | 73° 8    | 85° 5 | 69° 4     | 28th | 89° 0     | 24th | ° 787     | 71° 2              | 54° 5              | 15th      |      |
| November -  | 30° 003        | 77° 9            | 70° 6    | 81° 5 | 56° 0     | 27th | 87° 8     | 9th  | ° 693     | 72° 2              | 51° 5              | 26th      |      |
| December -  | 30° 090        | 71° 8            | 68° 1    | 76° 4 | 58° 0     | 21st | 83° 8     | 27th | ° 560     | 69° 4              | 54° 2              | 13th      |      |
| Mean -      | 30° 064        | 78° 4            | 70° 1    | 83° 1 | 63° 3     | —    | 88° 6     | —    | ° 697     | 70° 3              | 53° 6              | —         |      |

BERMUDA.

Lat. 32° 17' 40" N.

|             |         |       |       |       |       |      |       |      |       |       |       |      |  |
|-------------|---------|-------|-------|-------|-------|------|-------|------|-------|-------|-------|------|--|
| January -   | 30° 153 | 60° 9 | 51° 4 | 67° 4 | 42° 0 | 19th | 74° 2 | 10th | ° 479 | 90° 7 | 68° 0 | 23rd |  |
| February -  | 30° 070 | 60° 5 | 53° 7 | 69° 6 | 45° 0 | 16th | 75° 0 | 23rd | ° 503 | 84° 0 | 66° 0 | 16th |  |
| March -     | 30° 098 | 61° 5 | 50° 2 | 67° 7 | 43° 2 | 14th | 73° 0 | 28th | ° 434 | 73° 0 | 61° 0 | 19th |  |
| April -     | 30° 041 | 66° 1 | 53° 5 | 72° 5 | 45° 0 | 10th | 78° 0 | 1st  | ° 439 | 66° 0 | 39° 0 | 9th  |  |
| May -       | 30° 164 | 73° 1 | 60° 1 | 79° 6 | 50° 4 | 4th  | 85° 0 | 31st | ° 611 | 72° 0 | 60° 0 | 5th  |  |
| June -      | 30° 070 | 78° 2 | 65° 2 | 83° 2 | 57° 0 | 13th | 88° 0 | 13th | ° 766 | 75° 0 | 56° 0 | 30th |  |
| July -      | 30° 104 | 79° 9 | 68° 8 | 86° 7 | 63° 0 | 2nd  | 92° 0 | 27th | ° 788 | 75° 9 | 48° 0 | 25th |  |
| August -    | 30° 136 | 83° 5 | 70° 3 | 90° 4 | 64° 0 | 24th | 97° 0 | 11th | ° 873 | 72° 4 | 58° 0 | 24th |  |
| September - | 30° 040 | 83° 6 | 70° 0 | 90° 6 | 61° 2 | 30th | 98° 4 | 16th | ° 880 | 75° 2 | 60° 0 | 29th |  |
| October -   | 30° 065 | 73° 6 | 61° 9 | 81° 0 | 56° 5 | 27th | 86° 0 | 12th | ° 583 | 68° 0 | 50° 0 | 25th |  |
| November -  | 30° 110 | 71° 2 | 61° 9 | 77° 7 | 57° 5 | 22nd | 84° 2 | 8th  | ° 567 | 70° 6 | 50° 4 | 16th |  |
| December -  | 30° 102 | 65° 5 | 55° 9 | 71° 1 | 45° 0 | 14th | 77° 5 | 26th | ° 477 | 72° 0 | 54° 0 | 9th  |  |
| Mean -      | 30° 099 | 71° 5 | 60° 2 | 78° 1 | 52° 5 | —    | 84° 0 | —    | ° 617 | 74° 6 | 55° 7 | —    |  |

FORT CANNING, SINGAPORE.

Lat. 1° 16' N.

|                      |         |       |       |       |       |      |       |      |       |       |       |      |  |
|----------------------|---------|-------|-------|-------|-------|------|-------|------|-------|-------|-------|------|--|
| January -            | 29° 842 | 83° 5 | 67° 1 | 93° 1 | 65° 0 | 4th  | 97° 0 | 18th | ° 969 | 79° 0 | 68° 8 | 30th |  |
| February -           | 29° 884 | 84° 2 | 66° 8 | 94° 2 | 65° 2 | 1st  | 96° 8 | 22nd | ° 918 | 75° 6 | 67° 4 | 1st  |  |
| March -              | 29° 874 | 83° 7 | 68° 5 | 94° 3 | 66° 2 | 10th | 96° 0 | 20th | ° 896 | 77° 7 | 68° 8 | 31st |  |
| April -              | 29° 848 | 84° 6 | 69° 2 | 94° 9 | 66° 8 | 24th | 96° 6 | 21st | ° 899 | 77° 2 | 67° 4 | 20th |  |
| May -                | 29° 815 | 84° 6 | 68° 9 | 93° 9 | 67° 0 | 18th | 96° 4 | 14th | ° 896 | 76° 4 | 66° 8 | 28th |  |
| June -               | 29° 801 | 84° 6 | 68° 3 | 93° 9 | 64° 8 | 15th | 96° 8 | 12th | ° 903 | 76° 4 | 64° 8 | 22nd |  |
| July -               | 29° 843 | 83° 2 | 66° 8 | 93° 9 | 65° 2 | 17th | 95° 8 | 29th | ° 885 | 76° 4 | 69° 0 | 30th |  |
| August -             | 29° 813 | 84° 5 | 68° 5 | 94° 8 | 62° 8 | 27th | 98° 4 | 20th | ° 910 | 75° 2 | 65° 0 | 17th |  |
| September -          | 29° 858 | 83° 2 | 68° 7 | 93° 1 | 65° 4 | 4th  | 96° 0 | 16th | ° 913 | 80° 7 | 70° 9 | 23rd |  |
| October -            | 29° 870 | 86° 8 | 70° 3 | 95° 2 | 67° 8 | 1st  | 98° 2 | 19th | ° 951 | 75° 6 | 65° 3 | 25th |  |
| November -           | 29° 874 | 87° 4 | 68° 9 | 95° 7 | 65° 1 | 4th  | 98° 3 | 16th | ° 923 | 72° 3 | 51° 4 | 2nd  |  |
| Observatory changed. |         |       |       |       |       |      |       |      |       |       |       |      |  |
| Mean -               | 29° 847 | 84° 6 | 67° 7 | 91° 0 | 65° 6 | —    | 92° 4 | —    | ° 915 | 76° 5 | 65° 8 | —    |  |

No. IX.—continued.

at Netley and Foreign Stations in the Year 1888.

Long. 77° 21' W. Height of Barometer Cistern above Sea, 47 feet.

| Mean Amount of Clouds<br>negs. | Rainfall. |      |      | Weather.          |       |       |                   |      |            |           |        | Wind.                                                |      |      |      |     |      |     |      |       |  |
|--------------------------------|-----------|------|------|-------------------|-------|-------|-------------------|------|------------|-----------|--------|------------------------------------------------------|------|------|------|-----|------|-----|------|-------|--|
|                                | Total.    | Max. | Day. | Number of Days of |       |       |                   |      |            |           |        | Means of Observations under each Point<br>per Month. |      |      |      |     |      |     |      |       |  |
|                                |           |      |      | Rain.             | Snow. | Hail. | Thunder<br>Storm. | Fog. | Clear Sky. | Overcast. | Gales. | N.                                                   | N.E. | E.   | S.E. | S.  | S.W. | W.  | N.W. | Calm. |  |
|                                |           |      |      |                   |       |       |                   |      |            |           |        |                                                      |      |      |      |     |      |     |      |       |  |
| 6.4                            | 0.60      | 0.27 | 18th | 10.0              | —     | —     | —                 | —    | 4.0        | 10.5      | —      | 1.5                                                  | 8.5  | 13.0 | 4.5  | 1.0 | —    | 0.5 | 0.5  | 1.0   |  |
| 7.0                            | 1.83      | 0.60 | 18th | 11.0              | —     | —     | 2.0               | 1.0  | 2.5        | 13.0      | —      | 3.5                                                  | 2.5  | 5.0  | 6.0  | 9.0 | —    | —   | 2.5  | 0.5   |  |
| 6.8                            | 0.67      | 0.25 | 21st | 7.0               | —     | —     | 1.0               | —    | 2.0        | 13.5      | —      | 5.0                                                  | 6.0  | 5.5  | 6.5  | 3.5 | 1.0  | 0.5 | 2.5  | 0.5   |  |
| 6.5                            | 3.67      | 2.24 | 14th | 9.0               | —     | —     | —                 | —    | 3.5        | 9.5       | 5      | 3.5                                                  | 9.5  | 8.5  | 2.5  | 4.0 | 0.5  | —   | —    | 1.5   |  |
| 7.8                            | 13.63     | 5.61 | 13th | 12.0              | —     | —     | 5.0               | —    | 2.0        | 19.5      | —      | 0.5                                                  | 1.5  | 12.5 | 10.0 | 3.0 | —    | 1.0 | 1.0  | 1.5   |  |
| 7.7                            | 6.24      | 1.60 | 22nd | 13.0              | —     | —     | 8.0               | —    | 0.5        | 17.5      | —      | 2.5                                                  | 3.0  | 6.5  | 5.0  | 4.5 | 3.0  | 1.5 | 1.0  | 3.0   |  |
| 8.0                            | 9.12      | 1.76 | 26th | 22.0              | —     | —     | 10.0              | —    | —          | 18.0      | —      | 1.5                                                  | 4.0  | 4.0  | 10.5 | 3.0 | 0.5  | 1.0 | —    | 6.5   |  |
| 7.4                            | 9.00      | 2.64 | 13th | 21.0              | —     | —     | 8.0               | —    | —          | 15.5      | —      | 1.0                                                  | 3.5  | 19.0 | 5.0  | 1.0 | 0.5  | —   | —    | 1.0   |  |
| 8.1                            | 10.07     | 1.77 | 28th | 20.0              | —     | —     | 7.0               | —    | 0.5        | 20.5      | —      | 0.5                                                  | 5.5  | 6.0  | 10.0 | 4.0 | 1.5  | 0.5 | 1.0  | 1.0   |  |
| 7.2                            | 4.57      | 0.51 | 10th | 16.0              | —     | —     | 3.0               | —    | 2.0        | 15.0      | —      | 4.5                                                  | 10.5 | 5.0  | 5.5  | 1.5 | 0.5  | 0.5 | 2.0  | 1.0   |  |
| 6.3                            | 3.99      | 1.30 | 11th | 11.0              | —     | —     | —                 | —    | 2.0        | 10.5      | —      | 0.5                                                  | 8.0  | 6.0  | 3.5  | 0.5 | 2.0  | 1.5 | 6.0  | 2.0   |  |
| 6.9                            | 2.13      | 1.20 | 1st  | 9.0               | —     | —     | —                 | —    | 3.5        | 15.0      | —      | 3.5                                                  | 7.5  | 7.5  | 1.5  | 0.5 | 1.0  | 1.5 | 7.0  | 1.0   |  |
| 7.2                            | 5.46      | 1.65 | —    | 13.4              | —     | —     | 3.7               | 0.8  | 1.9        | 15.0      | —      | 2.0                                                  | 6.0  | 8.2  | 5.9  | 2.9 | 0.9  | 0.7 | 1.9  | 1.7   |  |

Long. 64° 47' W. Height of Barometer Cistern above Sea, 151 feet.

|     |      |      |      |      |   |      |     |   |      |      |     |     |      |     |     |     |      |     |     |     |
|-----|------|------|------|------|---|------|-----|---|------|------|-----|-----|------|-----|-----|-----|------|-----|-----|-----|
| 5.0 | 5.32 | 1.78 | 26th | 13.0 | — | 1.0  | —   | — | 10.0 | 7.0  | —   | 3.0 | 10.0 | 0.5 | 0.5 | —   | 8.0  | 2.0 | 7.0 | —   |
| 5.5 | 4.98 | 0.76 | 7th  | 10.0 | — | —    | 1.0 | — | 4.0  | 11.0 | —   | 0.5 | 6.0  | 1.0 | 3.5 | —   | 13.0 | 2.0 | 3.0 | —   |
| 5.5 | 3.39 | 0.48 | 18th | 14.0 | — | —    | 2.0 | — | 6.5  | 8.5  | —   | 2.5 | 7.0  | 0.5 | 1.0 | 1.0 | 8.0  | 4.5 | 6.5 | —   |
| 5.5 | 2.68 | 0.86 | 13th | 4.0  | — | —    | 1.0 | — | 7.0  | 7.0  | —   | 4.0 | 8.0  | 1.0 | 2.0 | 2.0 | 10.0 | 1.0 | 2.0 | —   |
| 4.5 | 0.63 | 0.23 | 24th | 6.0  | — | —    | —   | — | 14.0 | 11.0 | —   | 2.0 | 5.0  | —   | 5.0 | 2.0 | 10.0 | 1.0 | 6.0 | —   |
| 5.5 | 9.15 | 1.75 | 30th | 12.0 | — | —    | —   | — | 9.0  | 9.0  | —   | 1.0 | 4.0  | —   | 1.0 | 1.0 | 18.0 | 4.0 | 1.0 | —   |
| 5.0 | 6.30 | 1.90 | 14th | 8.0  | — | —    | 3.0 | — | 12.5 | 7.5  | —   | 0.5 | 1.5  | —   | 1.5 | 3.0 | 15.5 | 6.0 | 3.0 | —   |
| 5.0 | 5.71 | 1.16 | 23rd | 12.0 | — | —    | 5.0 | — | 11.0 | 6.0  | —   | 1.0 | 5.0  | 2.5 | 5.0 | 1.5 | 13.0 | 0.5 | 2.5 | —   |
| 4.0 | 3.55 | 0.76 | 26th | 7.0  | — | —    | —   | — | 16.5 | 4.0  | —   | 1.0 | 10.0 | 0.5 | 4.0 | 2.5 | 8.5  | —   | 3.5 | —   |
| 4.4 | 6.45 | 2.14 | 7th  | 13.0 | — | —    | 1.0 | — | 9.0  | 5.5  | —   | 2.0 | 4.0  | 1.5 | 3.0 | 0.5 | 8.5  | 0.5 | 8.0 | 3.0 |
| 4.5 | 6.93 | 1.93 | 24th | 18.0 | — | —    | 2.0 | — | 11.5 | 8.5  | 2.0 | 0.5 | 7.5  | 5.5 | 4.0 | 1.0 | 6.0  | 0.5 | —   | 5.0 |
| 4.0 | 8.78 | 2.63 | 5th  | 20.0 | — | —    | —   | — | 13.0 | 7.5  | —   | 6.0 | 5.0  | 2.0 | 1.0 | 1.0 | 5.5  | 2.0 | 3.0 | 5.5 |
| 4.9 | 5.40 | 1.37 | —    | 11.4 | — | 0.08 | 1.2 | — | 10.3 | 7.7  | 0.2 | 2.0 | 6.0  | 1.2 | 2.3 | 1.3 | 10.3 | 2.0 | 3.8 | 1.1 |

Long. 103° 53' E. Height of Barometer Cistern above Sea, 110 feet.

|                         |      |      |      |      |   |   |     |   |      |      |     |     |      |     |     |     |      |     |      |   |
|-------------------------|------|------|------|------|---|---|-----|---|------|------|-----|-----|------|-----|-----|-----|------|-----|------|---|
| 3.9                     | 5.25 | 1.53 | 25th | 8.0  | — | — | —   | — | 14.5 | 4.5  | —   | 6.0 | 10.0 | —   | —   | —   | —    | —   | 15.0 | — |
| 3.0                     | 1.88 | 1.13 | 20th | 5.0  | — | — | —   | — | 22.5 | 3.0  | —   | 3.5 | 5.0  | —   | 9.0 | 0.5 | 4.0  | —   | 7.0  | — |
| 3.8                     | 3.58 | 0.83 | 25th | 11.0 | — | — | —   | — | 15.0 | 5.0  | —   | 1.5 | 5.0  | —   | 5.5 | —   | 5.5  | —   | 13.5 | — |
| 4.3                     | 4.91 | 1.71 | 23rd | 10.0 | — | — | 1   | — | 6.5  | 9.0  | —   | —   | —    | —   | —   | 0.5 | 12.0 | 3.5 | 14.0 | — |
| 4.1                     | 9.60 | 1.87 | 26th | 10.0 | — | — | 1   | — | 12.0 | 6.0  | —   | —   | —    | —   | —   | —   | 11.0 | 6.0 | 14.0 | — |
| 4.0                     | 6.03 | 1.95 | 6th  | 8.0  | — | — | —   | — | 12.5 | 4.5  | 2.0 | —   | —    | —   | 1.0 | 2.5 | 20.5 | 2.5 | 3.5  | — |
| 4.8                     | 1.95 | 0.48 | 2nd  | 12.0 | — | — | 1   | — | 10.0 | 9.0  | —   | —   | —    | —   | 2.0 | 3.0 | 18.5 | 2.0 | 5.5  | — |
| 4.7                     | 1.11 | 0.20 | 8th  | 11.0 | — | — | 7   | — | 10.0 | 9.5  | —   | —   | —    | 0.5 | 2.5 | 7.0 | 14.5 | 5.5 | 1.0  | — |
| 4.8                     | 9.05 | 2.26 | 12th | 17.0 | — | — | 5   | — | —    | 12.0 | —   | 0.5 | 2.5  | 0.5 | 4.0 | —   | 13.0 | 7.5 | 3.0  | — |
| 3.4                     | 2.90 | 1.00 | 12th | 6.0  | — | — | —   | — | 10.0 | —    | —   | —   | 3.5  | —   | 2.5 | 2.0 | 7.5  | 3.0 | 6.0  | — |
| 3.5                     | 7.15 | 1.61 | 15th | 7.0  | — | — | —   | — | 8.0  | 7.0  | —   | —   | 1.0  | 1.5 | 3.0 | 0.5 | 10.5 | 4.0 | 1.5  | — |
| Observations not taken. |      |      |      |      |   |   |     |   |      |      |     |     |      |     |     |     |      |     |      |   |
| 4.0                     | 4.87 | 1.31 | —    | 10.4 | — | — | 2.8 | — | 9.9  | 7.2  | 0.2 | 1.0 | 2.5  | 0.2 | 2.7 | 1.5 | 10.6 | 3.1 | 7.7  | — |

## Appendix

## Annual Abstract of Meteorological Observations taken

HONG KONG.

Lat. 22° 16' 20" N.

| Month.    | Mean Pressure. | Air Temperature. |          |       |           |      |           |      |           | Tension of Vapour. | Relative Humidity. |           |      |
|-----------|----------------|------------------|----------|-------|-----------|------|-----------|------|-----------|--------------------|--------------------|-----------|------|
|           |                | Mean, 9 a.m.     | Means of |       | Abs. Min. |      | Abs. Max. |      | Per Cent. |                    | Minimum.           |           |      |
|           |                |                  | Min.     | Max.  | Temp.     | Day. | Temp.     | Day. |           |                    | Mean.              | Per Cent. | Day. |
|           |                |                  |          |       |           |      |           |      |           |                    |                    |           |      |
| January - | - 30°213       | 61°6             | 60°13    | 72°87 | 45°0      | 1st  | 75°0      | 9th  | °436      | 69°1               | 23°0               | 8th       |      |
| February  | - 30°142       | 57°7             | 53°0     | 64°03 | 43°0      | 3rd  | 75°0      | 11th | °402      | 90°5               | 45°0               | 4th       |      |
| March -   | - 30°037       | 66°1             | 62°23    | 74°03 | 55°0      | 8th  | 84°0      | 18th | °566      | 79°5               | 64°9               | 5th       |      |
| April -   | - 29°926       | 75°7             | 72°03    | 81°47 | 60°0      | 1st  | 90°0      | 29th | °747      | 79°0               | 65°0               | 20th      |      |
| May -     | - 29°719       | 80°6             | 74°06    | 85°90 | 68°0      | 5th  | 92°0      | 9th  | °838      | 80°1               | 72°0               | 9th       |      |
| June -    | - 29°813       | 81°9             | 78°13    | 86°07 | 70°0      | 4th  | 91°0      | 21st | °908      | 83°4               | 63°0               | 4th       |      |
| July -    | - 29°098       | 86°3             | 80°42    | 91°25 | 82°0      | 15th | 96°0      | 14th | °918      | 74°0               | 58°0               | 9th       |      |
| August -  | - 29°713       | 83°5             | 78°58    | 89°43 | 75°0      | 19th | 94°0      | 5th  | °901      | 79°5               | 61°0               | 3rd       |      |
| September | - 29°946       | 83°8             | 77°80    | 88°6  | 73°0      | 30th | 93°0      | 1st  | °826      | 71°6               | 58°0               | 13th      |      |
| October - | - 30°045       | 78°6             | 72°30    | 83°3  | 63°0      | 26th | 88°0      | 13th | °676      | 66°4               | 41°0               | 27th      |      |
| November  | - 30°096       | 73°7             | 67°80    | 80°9  | 64°0      | 12th | 86°0      | 2nd  | °576      | 68°8               | 45°0               | 12th      |      |
| December  | - 30°168       | 67°7             | 61°50    | 73°2  | 52°0      | 21st | 79°0      | 4th  | °511      | 74°0               | 45°0               | 27th      |      |
| Mean      | - 29°957       | 75°0             | 69°83    | 80°92 | 62°5      | —    | 87°0      | —    | °692      | 75°5               | 53°4               | —         |      |

SANITARIUM, HONG KONG.

Lat. 22° 6' N.

|             |   |   |       |       |      |      |      |      |   |   |   |   |
|-------------|---|---|-------|-------|------|------|------|------|---|---|---|---|
| January -   | - | - | -     | -     | -    | -    | -    | -    | - | - | - | - |
| February -  | - | - | -     | -     | -    | -    | -    | -    | - | - | - | - |
| March -     | - | - | -     | -     | -    | -    | -    | -    | - | - | - | - |
| April -     | - | - | -     | -     | -    | -    | -    | -    | - | - | - | - |
| May -       | - | - | 71°86 | 80°76 | 69°0 | 23rd | 85°0 | 2nd  | - | - | - | - |
| June -      | - | - | 73°8  | 80°63 | 75°0 | 13th | 86°0 | 21st | - | - | - | - |
| July -      | - | - | 76°16 | 83°29 | 81°0 | 16th | 90°0 | 18th | - | - | - | - |
| August -    | - | - | 75°19 | 85°06 | 76°0 | 12th | 89°0 | 5th  | - | - | - | - |
| September - | - | - | 74°80 | 83°80 | 75°0 | 29th | 89°0 | 1st  | - | - | - | - |
| October -   | - | - | 67°58 | 76°77 | 70°0 | 22nd | 83°0 | 13th | - | - | - | - |
| November -  | - | - | -     | -     | -    | -    | -    | -    | - | - | - | - |
| December -  | - | - | -     | -     | -    | -    | -    | -    | - | - | - | - |
| Mean -      | - | - | 73°13 | 81°72 | 74°0 | -    | 87°0 | -    | - | - | - | - |

No. IX.—*continued.*

at Netley and Foreign Stations in the Year 1888.

Long. 114° 9' 16" E. Height of Barometer Cistern above Sea, 18 feet.

| Mean Amount of Cloud-<br>iness.                                   | Rainfall. |      |      | Weather.          |       |       |                   |      |            |           |        |     |      | Wind.                                                |      |     |      |     |      |       |  |  |  |
|-------------------------------------------------------------------|-----------|------|------|-------------------|-------|-------|-------------------|------|------------|-----------|--------|-----|------|------------------------------------------------------|------|-----|------|-----|------|-------|--|--|--|
|                                                                   | Total.    | Max. | Day. | Number of Days of |       |       |                   |      |            |           |        |     |      | Means of Observations under each Point<br>per Month. |      |     |      |     |      |       |  |  |  |
|                                                                   |           |      |      | Rain.             | Snow. | Hail. | Thunder<br>Storm. | Fog. | Clear Sky. | Overcast. | Gales. | N.  | N.E. | E.                                                   | S.E. | S.  | S.W. | W.  | N.W. | Calm. |  |  |  |
|                                                                   |           |      |      |                   |       |       |                   |      |            |           |        |     |      |                                                      |      |     |      |     |      |       |  |  |  |
| 4.43                                                              | 0.56      | 0.13 | 31st | 7                 | —     | —     | —                 | 14   | 13.0       | 4.5       | —      | 1.5 | 14.0 | 11.5                                                 | 3.0  | 1.0 | —    | —   | —    | —     |  |  |  |
| 16.58                                                             | 3.20      | 0.94 | 1st  | 13                | —     | —     | 1                 | —    | 6.0        | 16.0      | —      | 1.5 | 14.0 | 3.0                                                  | 2.5  | 0.5 | 1.0  | 2.0 | 1.0  | 3.5   |  |  |  |
| 7.22                                                              | 10.03     | 5.50 | 26th | 18                | —     | —     | 2                 | 5    | 3.0        | 19.5      | —      | 1.5 | 16.0 | 3.0                                                  | 1.0  | 0.5 | 1.0  | 0.5 | —    | 7.5   |  |  |  |
| 6.13                                                              | 6.16      | 2.60 | 9th  | 12                | —     | —     | 3                 | —    | 6.0        | 10.5      | —      | 0.5 | 8.5  | 7.0                                                  | 2.0  | 2.5 | 1.5  | 1.0 | 0.5  | 6.5   |  |  |  |
| 6.70                                                              | 18.13     | 4.50 | 19th | 24                | —     | —     | 5                 | —    | 3.5        | 13.0      | —      | 1.0 | 6.0  | 6.0                                                  | 3.0  | 3.0 | 10.0 | —   | —    | 2.0   |  |  |  |
| 6.16                                                              | 30.93     | 8.50 | 25th | 23                | —     | —     | 3                 | —    | 4.0        | 9.0       | —      | 1.0 | 6.5  | 8.0                                                  | 1.0  | 3.0 | 7.0  | 0.5 | 0.5  | 2.5   |  |  |  |
| 2.8                                                               | 11.04     | 6.50 | 15th | 18                | —     | —     | 2                 | —    | 13.0       | 2.5       | —      | 0.5 | 5.0  | 6.5                                                  | 1.5  | 6.5 | 4.0  | 2.0 | 1.5  | 3.5   |  |  |  |
| 5.16                                                              | 17.87     | 3.20 | 10th | 19                | —     | —     | 2                 | —    | 10.5       | 7.5       | 1.0    | —   | 1.5  | 6.5                                                  | 1.0  | 5.0 | 6.0  | 6.5 | 0.5  | 4.0   |  |  |  |
| 5.38                                                              | 7.84      | 2.40 | 22nd | 20                | —     | —     | 1                 | —    | 7.0        | 7.0       | 2.0    | 0.5 | 5.0  | 11.5                                                 | 0.5  | 3.5 | 0.5  | 3.0 | 1.5  | 4.0   |  |  |  |
| 4.53                                                              | 4.74      | 2.0  | 9th  | 10                | —     | —     | 1                 | —    | 13.5       | 9.5       | —      | 1.0 | 10.5 | 11.0                                                 | 1.5  | 3.0 | 1.0  | 0.5 | 1.0  | 1.5   |  |  |  |
| 4.40                                                              | 0.45      | 0.20 | 10th | 6                 | —     | —     | —                 | —    | 13.0       | 6.0       | —      | 3.0 | 7.0  | 11.5                                                 | —    | 0.5 | 0.5  | 1.0 | 1.0  | 5.5   |  |  |  |
| 5.11                                                              | 4.18      | 2.0  | 19th | 4                 | —     | —     | —                 | —    | 11.0       | 13.0      | —      | 0.5 | 5.5  | 14.5                                                 | 0.5  | —   | —    | 0.5 | 1.0  | 8.5   |  |  |  |
| 5.38                                                              | 9.59      | 3.21 | —    | 14.5              | —     | —     | 1.7               | 1.2  | 8.6        | 9.8       | 0.2    | 1.0 | 9.1  | 8.3                                                  | 1.5  | 2.4 | 2.7  | 1.5 | 0.7  | 4.1   |  |  |  |
| Long. 114° 9' E. Height of Barometer Cistern above Sea, 905 feet. |           |      |      |                   |       |       |                   |      |            |           |        |     |      |                                                      |      |     |      |     |      |       |  |  |  |
| 5.36                                                              | 11.82     | 2.30 | 26th | 23.0              | —     | —     | 1.0               | —    | 5.0        | 7.0       | —      | 2.0 | 3.0  | 4.0                                                  | 10.0 | 5.0 | 2.0  | —   | 1.0  | 4.0   |  |  |  |
| 6.06                                                              | 28.79     | 8.40 | 25th | 25.0              | —     | —     | —                 | —    | 5.0        | 9.0       | —      | 3.0 | 5.0  | 8.0                                                  | 7.0  | 2.0 | 2.0  | —   | —    | 3.0   |  |  |  |
| 3.82                                                              | 8.60      | 5.16 | 15th | 8.0               | —     | —     | 1.0               | —    | 15.0       | —         | —      | 1.0 | 4.0  | 7.0                                                  | 7.0  | 1.0 | 1.0  | —   | —    | 10.0  |  |  |  |
| 4.05                                                              | 16.38     | 3.81 | 18th | 16.0              | —     | —     | 1.0               | —    | 15.0       | 2.0       | —      | —   | —    | 8.0                                                  | 13.0 | 1.0 | 1.0  | —   | 1.0  | 7.0   |  |  |  |
| 4.10                                                              | 7.18      | 3.0  | 22nd | 10.0              | —     | —     | —                 | —    | 12.0       | 2.0       | 2.0    | 2.0 | 8.0  | 6.0                                                  | 4.0  | —   | 2.0  | —   | 1.0  | 7.0   |  |  |  |
| 3.05                                                              | 4.82      | 2.52 | 8th  | 9.0               | —     | —     | —                 | —    | 16.0       | 1.0       | —      | 2.0 | 9.0  | 11.0                                                 | 2.0  | 1.0 | 3.0  | —   | —    | 3.0   |  |  |  |
| 4.41                                                              | 12.93     | 4.19 | —    | 13.3              | —     | —     | 0.5               | —    | 11.3       | 3.5       | 0.3    | 1.7 | 5.0  | 7.3                                                  | 7.2  | 1.7 | 1.8  | —   | 0.5  | 5.7   |  |  |  |



Appendix

Summary of Results of Meteorological Observations

| Stations.                | Altitude, above Sea level. | Latitude.   | Longitude.  | Air Pressure. | Air Temperature. |          |       |           |              |           |                 |                     | Tension of Vapour. | Relative Humidity. |                |  |
|--------------------------|----------------------------|-------------|-------------|---------------|------------------|----------|-------|-----------|--------------|-----------|-----------------|---------------------|--------------------|--------------------|----------------|--|
|                          |                            |             |             |               | Mean, 9 a.m.     | Means of |       | Abs. Min. |              | Abs. Max. |                 | Per Cent.           |                    | Min.               |                |  |
|                          |                            |             |             |               |                  | Min.     | Max.  | Temp.     | Date.        | Temp.     | Date.           |                     |                    | Per Cent.          | Date.          |  |
|                          |                            |             |             |               |                  |          |       |           |              |           |                 |                     |                    |                    |                |  |
| Mediterranean:           | ft.                        | ° ' "       | ° ' "       |               |                  |          |       |           |              |           |                 |                     |                    |                    |                |  |
| Gibraltar -              | 53                         | 36 6 20 N.  | 5 20 53 E.  | 30.078        | 63.7             | 53.3     | 69.2  | 39.5      | 1 Feb.       | 88.6      | 30 June 25 July | .441                | 73.0               | 33.8               | 29 Aug.        |  |
| Malta -                  | 70                         | 35 53 49 N. | 14 30 54 E. | 29.982        | 66.8             | 62.1     | 70.7  | 44.6      | 15 Jan.      | 96.2      | 10 July         | .489                | 70.7               | 36.4               | 10 July        |  |
| Scutari -                | 60                         | 41 0 0 N.   | 29 3 0 E.   | 29.962        | 57.3             | 49.9     | 66.2  | 18.0      | 2 Jan.       | 103.2     | 19 July         | .379                | 73.5               | 41.0               | 19 Mar. 28 May |  |
| Cyprus:                  |                            |             |             |               |                  |          |       |           |              |           |                 |                     |                    |                    |                |  |
| Nicosia -                | 592                        | 35 10 52 N. | 33 21 15 E. | 17.37         | 61.4             | 45.9     | 70.7  | 20.5      | 23 Dec.      | 93.2      | 7 May           | .459                | 79.9               | 34.0               | 29 Mar.        |  |
| Polymedia                | 460                        | 34 40 0 N.  | 32 2 0 E.   | 29.937        | 67.2             | 47.6     | 75.5  | 29.0      | 8 and 9 Jan. | 101.0     | 5 Oct.          | .487                | 70.3               | 40.8               | 13 Oct.        |  |
| Troodos -                | 5,720                      | 34 55 0 N.  | 32 33 0 E.  | *             | 68.5             | 58.1     | 77.9  | 44.1      | 18 Sep.      | 101.0     | 19 July         | .427                | 63.3               | 25.0               | 31 July        |  |
| Natal. "Fort Napier."    | 2,220                      | 29 3 0 S.   | 30 2 0 E.   | 29.904        | 66.8             | 53.9     | 78.6  | 31.6      | 29 July      | 106.0     | 11 Dec.         | .443                | 63.5               | 26.6               | 21 Nov.        |  |
| Sierra Leone -           | 224                        | 8 29 30 N.  | 13 9 17 W.  | 29.905        | 79.2             | 60.7     | 97.4  | 60.3      | 9 Nov.       | 100.9     | 23 Oct.         | .806                | 80.3               | 32.0               | 27 Dec.        |  |
| West Indies:             |                            |             |             |               |                  |          |       |           |              |           |                 |                     |                    |                    |                |  |
| Barbados -               | 30.7                       | 13 7 0 N.   | 59 40 0 W.  | 30.005        | 81.7             | 73.0     | 83.7  | 66.0      | 11 Apr.      | 91.0      | 16 June         | .783                | 70.7               | 46.4               | 16 June        |  |
| Newcastle, Jamaica.      | 3,800                      | 15 6 0 N.   | 76 42 0 W.  | 29.968        | †                | 55.8     | 79.8  | 49.0      | 26 Nov.      | 88.2      | 22 June         | Instruments broken. |                    |                    |                |  |
| Up. Park Camp.           | 245                        | 17 54 0 N.  | 76 56 0 W.  | 29.962        | 84.5             | 63.5     | 84.5  | 53.5      | 28 Feb.      | 94.0      | 30 Dec.         | .775                | 64.1               | 44.5               | 19 Jan.        |  |
| Nassau, Bahamas.         | 47                         | 25 5 0 N.   | 77 21 0 W.  | 30.064        | 78.4             | 70.1     | 83.1  | 55.0      | 17 Mar.      | 94.7      | 17 June         | .697                | 70.3               | 44.6               | 13 Mar.        |  |
| Bermuda -                | 154                        | 30 17 40 N. | 64 47 0 W.  | 30.009        | 71.5             | 60.2     | 78.1  | 42.0      | 19 Jan.      | 98.4      | 16 Sep.         | .617                | 74.6               | 39.0               | 9 Apr.         |  |
| Singapore, Fort Cannink. | 110                        | 1 16 0 N.   | 103 53 0 E. | 29.847        | 84.6             | 67.7     | 94.0  | 62.8      | 27 Aug.      | 98.4      | 20 Aug.         | .915                | 76.5               | 51.4               | 2 Nov.         |  |
| Hong Kong -              | 18                         | 22 16 20 N. | 114 9 16 E. | 29.957        | 75.0             | 69.83    | 80.92 | 43.0      | 3 Feb.       | 96.0      | 14 July         | .692                | 75.5               | 23.0               | 8 Jan.         |  |
| Sanitarium -             | 905                        | 22 6 20 N.  | 114 9 16 E. | —             | —                | 73.89    | 81.72 | 69.0      | 23 May       | 90.0      | 13 July         | —                   | —                  | —                  | —              |  |

\* Aneroid in use.

† Instrument broken.

## No. IX.—continued.

taken at Foreign Stations in the Year 1888.

| Mean Amount of Cloudiness. | Rainfall. |      |          | Weather.          |       |       |                    |      |            |           |        |      | Wind.                                                |      |      |      |      |      |      |      |            | Remarks.<br>No. of Months<br>in which<br>Observations<br>were taken. |
|----------------------------|-----------|------|----------|-------------------|-------|-------|--------------------|------|------------|-----------|--------|------|------------------------------------------------------|------|------|------|------|------|------|------|------------|----------------------------------------------------------------------|
|                            | Total.    | Max. | Date.    | Number of Days of |       |       |                    |      |            |           |        |      | Means of Observations under each<br>Point per Month. |      |      |      |      |      |      |      | Calm.      |                                                                      |
|                            |           |      |          | Rain.             | Snow. | Hail. | Thunder-<br>storm. | Fog. | Clear sky. | Overcast. | Gales. | N.   | N.E.                                                 | E.   | S.E. | S.   | S.W. | W.   | N.W. |      |            |                                                                      |
| 4.5                        | 48.73     | 6.05 | 1 Mar.   | 7.2               | —     | —     | 0.8                | 0.2  | 14.1       | 8.8       | 0.2    | 0.04 | 6.6                                                  | 7.3  | 1.3  | 0.1  | 3.3  | 8.1  | 3.6  | 0.2  | 12 months. |                                                                      |
| 3.3                        | 14.89     | 2.75 | 11 Oct.  | 4.3               | —     | 0.8   | 0.9                | —    | 16.5       | 3.6       | 0.3    | 2.0  | 4.8                                                  | 1.7  | 5.7  | 1.04 | 2.8  | 2.2  | 10.2 | 2.5  | 12 "       |                                                                      |
| 5.2                        | 38.21     | 1.85 | 25 Aug.  | 11.1              | 2.9   | 2.2   | 1.5                | 1.3  | 11.0       | 12.0      | —      | 6.3  | 7.7                                                  | 3.2  | 0.6  | 3.6  | 3.4  | 1.3  | 0.3  | 4.3  | 12 "       |                                                                      |
| 4.8                        | 8.25      | 1.41 | 10 Dec.  | 6.0               | —     | 0.6   | 2.2                | 0.8  | 15.0       | 7.6       | —      | 3.2  | 4.5                                                  | 6.0  | 4.2  | 2.2  | 1.9  | 12.8 | 4.8  | —    | 5 "        |                                                                      |
| 4.7                        | 28.33     | 1.79 | 11 Nov.  | 7.5               | —     | 0.6   | 2.3                | —    | 6.7        | 3.2       | —      | 8.1  | 0.9                                                  | 1.6  | 0.2  | 2.6  | 0.7  | 14.1 | 1.5  | —    | 9 "        |                                                                      |
| 2.7                        | 0.39      | 0.33 | 23 Sept. | 0.5               | —     | 0.2   | 0.5                | 0.2  | 18.5       | 1.0       | —      | 12.2 | 0.7                                                  | 0.7  | 0.5  | 2.5  | 0.2  | 7.7  | 0.7  | —    | 4 "        |                                                                      |
| 4.6                        | 46.42     | 5.15 | 8 Sept.  | 9.0               | —     | —     | 3.7                | 1.2  | 14.8       | 10.9      | 1.3    | 1.5  | 3.5                                                  | 10.9 | 2.6  | 2.9  | 1.1  | 0.5  | 1.6  | 5.1  | 12 "       |                                                                      |
| 3.9                        | 165.52    | 6.20 | 1 Sept.  | 12.7              | —     | —     | 6.3                | —    | 19.2       | 3.5       | —      | 8.3  | 1.9                                                  | 3.2  | 1.2  | 0.9  | 1.0  | 4.9  | —    | 0.04 | 12 "       |                                                                      |
| 4.9                        | 60.64     | 2.70 | 23 Aug.  | 15.7              | —     | —     | —                  | —    | 7.7        | 4.0       | —      | 0.2  | 14.4                                                 | 14.9 | 1.7  | —    | —    | —    | —    | 0.08 | 12 "       |                                                                      |
| 3.8                        | 107.21    | 4.71 | 10 May   | 12.5              | —     | —     | 2.6                | —    | 17.0       | 4.4       | 0.88   | 2.3  | 5.4                                                  | 2.1  | 4.5  | 2.2  | 4.9  | 2.6  | 6.1  | 9.4  | 12 "       |                                                                      |
| 3.3                        | 48.06     | 3.50 | 10 May   | 6.6               | —     | —     | 1.2                | —    | 17.7       | 2.6       | —      | 1.6  | 5.4                                                  | 0.5  | 11.3 | 2.2  | 4.9  | 1.2  | 3.2  | —    | 12 "       |                                                                      |
| 7.2                        | 65.52     | 5.61 | 13 May   | 13.4              | —     | —     | 3.7                | 0.08 | 1.9        | 15.0      | —      | 2.0  | 6.0                                                  | 8.2  | 5.9  | 2.9  | 0.9  | 0.7  | 1.9  | 1.7  | 12 "       |                                                                      |
| 4.9                        | 64.85     | 2.63 | 5 Dec.   | 11.4              | —     | 0.08  | 1.2                | —    | 10.3       | 7.7       | 0.2    | 2.0  | 6.0                                                  | 1.2  | 2.3  | 1.3  | 10.3 | 2.0  | 3.8  | 1.1  | 12 "       |                                                                      |
| 4.0                        | 53.50     | 2.26 | 12 Sept. | 10.4              | —     | —     | 2.8                | —    | 9.9        | 7.2       | 0.2    | 1.0  | 2.5                                                  | 0.2  | 2.7  | 1.5  | 10.6 | 3.1  | 7.7  | —    | 11 "       |                                                                      |
| 5.38                       | 115.13    | 8.50 | 23 June  | 14.5              | —     | —     | 1.7                | 1.2  | 8.6        | 9.8       | 0.2    | 1.0  | 9.1                                                  | 8.3  | 8.5  | 2.4  | 2.7  | 1.5  | 0.7  | 4.1  | 12 "       |                                                                      |
| 4.41                       | 77.59     | 8.40 | 25 June  | 13.3              | —     | —     | 0.5                | —    | 11.3       | 3.5       | 0.3    | 1.7  | 5.0                                                  | 7.3  | 7.2  | 1.7  | 1.8  | —    | 0.5  | 5.7  | 6 "        |                                                                      |

APPENDIX No. X.

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THE PARKES' MEMORIAL PRIZE.

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Surgeon-General Sir T. LONGMORE, Kt., C.B., *President of Committee.*

Surgeon-Major J. LANE-NOTTER, M.D., *Treasurer.*

Surgeon A. M. DAVIES, *Secretary.*

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*Prize Essay Gold Medallists.*

1883. Surgeon R. J. POLDEN, Indian Medical Service.

1886. Surgeon ANDREW DUNCAN, M.D., Indian Medical Service.

1889. Surgeon R. H. FIRTH, F.R.C.S., Medical Staff.

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The following is the subject for the next prize :—

ON THE INFLUENCE OF SOIL AS A FACTOR IN THE PRODUCTION OF DISEASE, ESPECIALLY IN HOT CLIMATES. TO BE ILLUSTRATED, AS FAR AS PRACTICABLE, BY FACTS PERSONALLY OBSERVED BY THE WRITER.

*The Prize is One Hundred Pounds in Money and a Gold Medal, and is awarded Triennially.*

The Competition is open to all Medical Officers of the Army, Navy, and Indian Services of Executive Rank on full pay, with the exception of the Assistant Professors of the Army Medical School during their term of Office. Essays to be sent to the Secretary of the "Parkes' Memorial Fund," Royal Victoria Hospital, Netley, on or before the 31st day of December 1891. Each Essay to have a Motto, and to be accompanied with a sealed envelope bearing the same Motto and containing the name of the Competitor.

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## APPENDIX No. XI.

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**THE ALEXANDER MEMORIAL FUND.**

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**COMMITTEE.**

Sir T. CRAWFORD, K.C.B., M.D., Hon. Surgeon to the Queen, *late Director-General, President.*

Director-General W. A. MACKINNON, C.B.

Surgeon-General T. G. BALFOUR, M.D., F.R.S., Hon. Physician to the Queen.

Surgeon-General Sir T. LONGMORE, C.B., Hon. Surgeon to the Queen, Professor of Military Surgery.

Deputy Surgeon-General J. A. BOSTOCK, C.B., Hon. Surgeon to the Queen.

Brigade-Surgeon ALFRED F. S. CLARKE, M.D.

Inspector-General of Hospitals, R. LAWSON.

Surgeon-General J. IRVINE, M.D., Hon. Physician to the Queen.

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Surgeon-Major W. JOHNSTON, M.D., *Honorary Secretary.*

**PRIZE ESSAY GOLD MEDALLISTS.**

1870. Assistant Surgeon A. B. R. MYERS, Coldstream Guards.

1873. Surgeon F. H. WELCH, Medical Department.

1876. Surgeon-Major J. H. PORTER, Medical Department.

1879. Surgeon JOHN MARTIN, Medical Department.

1882. Surgeon-Major F. H. WELCH, Medical Department.

1885. Surgeon JOHN MARTIN, Medical Staff.

1888. Surgeon ROBERT HAMMILL FIRTH, Medical Staff.

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At a meeting of the Committee held on the 16th March 1888 the prize of 50*l.* and Gold Medal of the value of 10*l.* was awarded to Surgeon Robert Hammill Firth, F.R.C.S. Eng., Medical Staff, for the best Essay on "The Relations between the Food and Work of the British Soldier."

The subject for the next competition is "The Use of Drugs in the Treatment of Disease in the Army: the Principles on which Medicines should be selected so as to meet the requirements of Field Service."

Essays addressed to the President of the Committee, 18, Victoria Street, S.W., to be despatched so as to reach on or before the 31st December 1890.

Essays are to be legibly and clearly written, superscribed with a brief motto, and accompanied by a sealed envelope similarly superscribed, containing the name and address of the author.

No essay shall exceed in length fifty pages of ordinary printed octavo, which may be estimated as amounting to 20,000 words (a page of octavo containing about 400 words). This limit to be exclusive of tables which may be added in the form of appendices.

The competition is limited to executive medical officers of the Army on full pay, but Assistant Professors at Netley are not allowed to compete while so employed.

The essays of unsuccessful competitors will be returned on application to the Honorary Secretary. All essays, received from former competitors for this prize, which are not applied for before 31st December 1890, will be destroyed.

W. JOHNSTON, M.D., Surgeon-Major, Hon. Sec.

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For Her Majesty's Stationery Office.  
[13555.—875.—6/90.]**











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